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ABSTRACT

This final report describes a 3-year project which examined effects of different service delivery structures on the development of toddlers with disabilities who were receiving early intervention within natural group environments. Participants (n=70) were matched across four groups who were receiving either full-time specialized instruction or part-time consulting specialized instruction, and within each of these groups, were receiving therapy either within or outside of the natural group setting. Measures included indices of child development and social competence; family background, needs, use of community resources and social support; and the family's evaluation of their child's intervention program. Other measures documented intervention parameters within settings, specifically the type and intensity of specialized services, the quality of the intervention environment, type and quality of Individualized Family Service Plan goals and implementation, family involvement, and program costs. Evaluations were conducted every 3 months, beginning at 24 months and continuing through 36 months. Findings indicated that service location and modality were most consistently related to child development. Services provided at the early intervention center, in a group environment, and using a consulting model were related to greater developmental change than the alternatives. Fifty-two tables detail the study's findings. (Contains 11 references.) (DB)

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An Analysis of the Effectiveness of Staffing Patterns for Young Children Attending Natural Group Environments for Early Intervention

FINAL REPORT

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II. ABSTRACT

Staffing Patterns Research Project

Mary Beth Bruder, Ph.D.
Director

The Staffing Patterns Research Project was a field initiated study funded from January, 1994 through January 1997. **The project was designed to examine the effects of different service delivery structures on the development of toddler age children with disabilities who were receiving early intervention within natural group environments.**

The design methodology called for a quasi-experimental comparison of the existing service delivery arrangements wherein repeated measure analyses were conducted at three month intervals for up to twelve months. Participants were matched across four groups as determined by their receiving full-time specialized instruction or part-time consulting specialized instruction, and within each of these groups, as to whether they received therapy within the natural group setting or outside of the group.

Measures included indices of child development and social competence; family background, needs, use of community resources and social support, and the family's evaluation of their child's intervention program. A variety of measures also documented intervention parameters within settings, specifically addressing the type and intensity of specialized services, the quality of the intervention environment, type and quality of IFSP goals and implementation, type and level of family involvement, as well as the cost of services to both families and programs.

Evaluations were conducted every three months beginning at 24 months of age or upon entry into the study, and continuing through 36 months or exit from the study. The longitudinal participants underwent five evaluation periods, at 24, 27, 30, 33 and 36 months. The cross-sectional participants joined the study at either 27 or 30 months of age and continued through 36 months, resulting in between three and four assessment periods.

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IV. GOALS AND OBJECTIVES OF THE PROJECT

Background

The reauthorization of Part H, P.L. 99-457 has provided the impetus for state agencies and service providers to re-examine the feasibility of using community-based early childhood programs (e.g., child care programs) as sites for the delivery of early intervention services. In particular, section 677(d)(5) of P.L. 102-119 states that "the Individualized Family Service Plan must contain a statement of the natural environments in which early intervention services shall approximately be provided." The definitions under Part H (P.L. 102-119) further clarifies that when group settings are utilized for intervention, the infant or toddler with a disability should be placed in groups with same age peers without disabilities, such as play groups, day care centers, or whatever typical group setting exists for infants and toddlers without disabilities (p. 12 House Report).

At this time, few states are providing a model of early intervention which utilizes community environments. Data from a pilot survey to Part H directors (from both states and territories) suggested that only five of 29 states or territories have both fiscal and regulatory policies to support inclusive community placements for infants or toddlers eligible for early intervention services. This pilot survey (conducted by the proposed principle investigator of this project) also found that while 21 of the respondents permit the use of inclusive community placements, none reported having more than 50% of their enrolled children (within the state) placed in inclusive group settings (as opposed to group placements for disabled children only).

The state of Connecticut is unique in that it has been providing early intervention services to eligible infants and toddlers within group settings in the natural environment. The Department of Mental Retardation (DMR) has been utilizing these placements since 1986. By 1989, there were no longer any segregated (infants and toddlers with disabilities only) group settings for early intervention under DMR. During 1991-92, there were 226 toddlers placed within 86 child care centers throughout Connecticut. Early intervention services are provided within the centers and tuition is paid for by DMR. The toddlers attend sessions two to four half days a week (on average). An additional 586 infants and toddlers with disabilities are being served by DMR within the home (e.g., other natural environment) as per age and/or parent choice.

While this model has been in effect in Connecticut for five years, there are many who question its effectiveness. In particular, the placement of choice for many early intervention providers across the country still remains a segregated (children with disabilities only) center based program (Gallagher, et al., 1989). While 102-119 may provide the impetus for change, segregated programs continue to be the primary site for the delivery of early intervention, and even in Connecticut, most preschool special education programs continue to be segregated.

Unfortunately, there has not been any systematic attempts to evaluate the Connecticut DMR system of early intervention. As a result there are no

developmental nor behavioral outcome data on the effects of placement in community-based natural group environments on the group of toddlers receiving early intervention services in Connecticut. Nor are there any data available on the effects of this model on the families of the children. Additionally, there are no systematic descriptions of the level and types of services and supports provided to each of the enrolled children, and the cost of each. **It would seem reasonable to suggest that an evaluation be conducted on this statewide system to assist other states in the planning and implementation of early intervention services within natural group environments as they move toward full adoption of P.L. 99-457.**

Goal

The principle goal of the study was to examine the effectiveness of four early intervention treatment conditions (service delivery structure) which were being implemented within natural group environments for toddler age children with disabilities in Connecticut. The study was descriptive in nature, since random assignment within treatment conditions was not feasible. Detailed comparisons were performed by statistical analyses on the body of data collected across treatment conditions. Measures on the child, family and service implementation began at the child's entry into the study at 24 months and continued at three month intervals until the child was transitioned out of the early intervention (into preschool which may or may not be inclusive) at 36 months.

V. THEORETICAL FRAMEWORK

Treatment Approach

Teacher. As previously stated, service delivery structure varied as a function of the IFSP process that occurred throughout Connecticut. At this time children were placed in natural group environments with a variety of staffing options, often determined by availability and tradition (e.g., what has worked with other children). The DMR early intervention program employs 97 early childhood special education teachers, all of whom meet state certification standards. Though a variety of staffing options are currently used, two specific options were examined: full time teacher within the natural group setting; part time consulting teacher within the natural group setting. A preliminary examination of current teacher assignments within settings suggested that level of child disability (e.g., mild, moderate, severe) had not been used as the factor when designing service structure during the IFSP.

It was expected that there would be some overlap between service structure in the two teacher conditions. That is, though the full time teacher provided direct services to the child with the disability within the natural group environment, it was expected that he/she would also provide consulting services to the other teaching staff within the environment as appropriate. Conversely, the part time consulting teacher provided some direct service to the child with disabilities within the natural group environment. These were measured as part of service implementation outcomes.

Therapy. All of the children within the DMR early intervention program received at least one therapy service (e.g., physical therapy, occupational therapy, speech and language therapy, either direct or consultative). These services were usually provided at the convenience and availability of the staff. Some children received these services within the natural group environment during activities and routines (e.g., integrated therapy). Others received these services outside these settings, either at home, or in therapy/rehabilitation facilities. In addition, some children received therapies outside the DMR service delivery model conducted by other agencies. These two therapy options were used to define service delivery structure for the purpose of examining the effects of therapy model on child and family outcome.

Measures

There has been an increasing amount of attention on the overall efficacy of early intervention services for young children with disabilities (Bricker, Bailey & Bruder, 1984; Casto & Mastropieri, 1986; Dunst, 1985). This increased scrutiny has encouraged both researchers and practitioners alike to broaden their scope to encompass a social system (Dunst, Trivette & Deal, 1988) or ecological view (Bailey & Simeonsson, 1988) of intervention. This scope has encouraged the expansion of early intervention impact measures to include variables traditionally underrepresented in the efficacy literature. The data which were collected in this study represented a social systems perspective to early intervention, and the specific variables represented such. The data set included information which was categorized under four headings: family background; child status; family status; and service description. In addition, a

number of social competence measures were also included. The following is a list of the specific measures.

List of Instruments to Measured

Family Background Information
- SES
- Race
- Cultural and Linguistic Background
- Educational Level of Caregivers
- Marital Status
- Family Members Age and Sex
- Occupation of Caregivers
- Primary Disabling Condition of Child
- Child Intervention History

Child Status
- Battelle Developmental Inventory (Newborg, Stock, Wnek, Guidubaldi & Svinicki, 1984)
- Peabody Motor Scales (Folio & Fewell, 1983)
- Communication and Symbolic Behavior Scales (Wetherly & Prizant, 1992)
- The Teacher Rating Scale of Intervention Behavior (Odom, Kohler & Strain 1987)
- Social Participation and Cognitive Play (Guralnick & Groom, 1987)
- Individual Social Behaviors (Guralnick & Groom, 1987)
- Social Network Questionnaire
- Social Status Questionnaire

Family Status
- Family Use of Resources
- Family Out of Pocket Expenses for Child
- Family Needs Scale (Dunst, Cooper, Weeldreyer, Snyder & Chase, 1988)
- Personal Network Matrix (Trivette & Dunst, 1988)
- Barnard Teaching Scale (Barnard & Bee, 1983)
- Family Report (McWilliam, 1991)

Service Characteristics
- Infant and Toddler Environment Rating Scale (Harms & Clifford, 1980)
- Analysis of Interventions for each child
- Analysis of the Delivery of Related Services for each child
- Analysis of frequency, participants, content, and outcomes of team meetings
- Staff Qualifications
- Teacher-Child Ratio
- IFSP Content Analysis
- Daily Activities Observation

Family background information included information on the families and children in the study. It included: race; SES; educational level of caregivers; marital status; family members (age and sex); occupation of the caregivers, and medical and intervention history of the child.

Child status information included developmental measures including the Battelle Developmental Inventory, the Peabody Motor Scales, and the Communication and Symbolic Behavior Scales. The measures also included the Social Participation and Cognitive Play Scale, the Individual Social Behavior Scale, and the Teacher Rating Scale of Intervention Behavior. Two project developed scales were also implemented: the Social Network Questionnaire and the Social Status Questionnaire. The scores on these measures were separately analyzed to describe relationships and patterns both within and across treatments.

Family status included the family's involvement and use of community services and resources as measured by a project developed questionnaire; the family perception of their child's intervention programs as measured by the Family Report and the family's costs incurred as a result of their child's disability (estimated monthly out of pocket expenses). Other measures included the Family Needs Scale, and the Personnel Network Matrix.

Service characteristics included a description of the service delivery components such as number and types of staff within the natural setting (including qualifications), number and types of children in the setting, number and types of activities during a class session and therapy session, type of IFSP

goals, and length, frequency, membership and content of team meetings involving the parents, special education teacher, related service staff and community program staff for the purpose of intervention planning. In addition, a global measure of the environment was implemented, the Infant-Toddler Environment Rating Scale.

A number of measures were employed to document the fidelity of treatment. These included observations of the child's daily routine, and documentation of teaching and therapy interventions per each child through both observation and teacher/therapist report.

Reliability. Three types of inter-observer reliability were collected during the assessment procedures, data coding and data entry procedures. First, 20% of all protocols were independently assessed (child and environment variables only). Second, the data coding was completed by two independent coders for 20% of all protocols. Third, data entry was checked for 20% of all files by an independent party.

Data Collection Procedures

Data were collected on a three month interval schedule beginning when the toddler with disabilities entered the study at 24 months. It was anticipated that children would continually enter the study during the first two years of the project, and matches on child variables between programs were assessed on a bi-monthly basis. That is, after a family agreed to participate in the study (approximately two months prior to the child's 24 month birthday or corrected age), the child's primary service provider was interviewed over the phone as to the child's developmental status as measured by intervention assessments.

The Abilities Profile (included in Appendix B) was completed by the project coordinator and verified by at least one other member of the intervention team (by phone) and the parent. This profile has demonstrated reliability as an indicator of a child's strengths and needs (Simeonsson & Bailey, 1992). If there was a major discrepancy in the child's description by the three reporters (interventionists and parent) the coordinator visited the child in the home. Over a two month period, it was expected that we would receive 35 referrals from throughout the state (yearly total = 210). Enrollment in the study was based on a match between children participating in the four service delivery model settings. Data were collected in both the program setting and in the home by part-time research assistants (N=2) and the coordinator. One (half day intervention session) observation occurred at the program site to assess the environment (activity log, and ITERS) and to interview and collect data from the primary special education teacher on variables such as delivery and intensity of services, staff qualifications, meeting records, intervention goals and schedules. The teacher also scored one questionnaire on the child's social skills, and reviewed the child's IFSP goals. Another observation day occurred to videotape four different activities for use when scoring the Social Participation and Play Scale and Social Interaction scale. During this observation, the research assistant also scored the Battelle Developmental Inventory, and the Communication and Symbolic Behavior Scales, and the Peabody Motor Development Scales. These measures were completed during a home visit during which parents were asked to fill out the questionnaires. Therapy which occurred outside the natural environment was also observed. It was expected that data collection would occur during a one week period for

each child, and each child would necessitate two and a half days of data collection (both home and intervention setting) and one and a half days of transcription of tapes and scoring protocols, and analyzing the IFSP. It was anticipated that an average of two to three children would enter the study each month, resulting in continuous collection of data.

Data Analysis

The data was entered into a Macintosh CI and analyzed by SPSS for the Macintosh. Following each data point, the appropriate score sheets for each variable were filled out, the data were coded, and then entered into data files.

The data from the investigation fall into the following domains: Family Background; Child Developmental Status; Family Status; and Service Characteristics. Analyses was undertaken at three points of time. Initial analysis was conducted to determine the initial consistency between groups. Subsequent analysis compared the four groups of children on developmental outcomes (observations; questionnaires) via two way ANOVAS and MANOVAS measures. To further asses the relationships between changes in developmental outcome and service model (as well as service characteristics and background variables), a number of other procedures were used. These included covariate analysis in which background factors and developmental factors were analyzed to examine the multivariate effects of these predisposing variables. In addition, both linear and multiple regression analysis were computed. Correlations were also used to assess the reliability and stability of dependent measures over time. Significant ANOVAS were followed up with the appropriate post hoc analysis.

VI. DESCRIPTION OF METHODS AND PARTICIPANTS

Purpose and Design

A longitudinal study examined 70 toddler aged children with disabilities and their families receiving early intervention services in natural group environments. These inclusive programs were community placements in which no more than 20% of the total enrollment of each class was comprised of children with disabilities. The study was designed to examine the effects of different service delivery structures on the development and social competence of the children and their families' needs, social contacts, sources of support and use of available community resources

The original design encompassed a comparison of four service delivery structures used by early intervention staff. The four are: (1) special education teacher is present within the natural environment during the full time the child is and therapy (as needed) is delivered to the child within the program in the natural environment; (2) special education teacher is present within the natural environment during the full time the child is and therapy (as needed) is delivered to the child outside the program (3) special education teacher is present within the natural environment only part time (less than three hours) during the time the child is and therapy (as needed) is delivered to the child within the program in the natural environment; (4) special education teacher is present within the natural environment only part time (less than three hours) during the time the child is and therapy (as needed) is delivered to

the child outside the program. The design called for a quasi-experimental approach with groups comprised of children matched on demographics, family background, and basic developmental level since random assignment of children to group was impossible.

Due to several logistical issues (see section VII) the four group comparison was not implemented. In its place, extensive information was collected concerning all aspects of the service delivery structure for the 70 children in the study. The study, thus, was re-focused to address several related issues: (1) how children with disabilities and their families developed during the time the child was receiving early intervention services; (2) a full description of the nature of early intervention classrooms and services; (3) how services related to each other and whether distinctive patterns of service delivery were evident; and (4) whether service delivery factors were related to child and family status.

The Participants

The Children and Their Families

A total of 70 children participated in the study; 32 were girls and 38 were boys. Approximately two thirds of the sample was Caucasian (65.7%) with African American and Latino children representing 12.9% and 15.7% of the sample respectively. Three children (4.3%) had mixed race background and one child (1.4%) was Asian. The racial mix very closely matched the proportions found in the target population of young

children with disabilities residing in Connecticut and receiving early intervention services from the State Department of Mental Retardation (DMR). Thus, the efforts to achieve a diverse sample were successful. (A full demographic profile of the children and families in the study sample appears in Table 1).

The children in the sample lived in a wide spectrum of household compositions -- two parents, mother only, father only, one or both grandparents, adoptive parents, and foster parents. The majority (58.6%) of the children lived with two parents or two parent substitutes (e.g. grandparents); 38.6% of the children lived with only their mothers or mother substitutes, and two children (2.9%) lived with only their fathers.

More than one third of the families (35.7%) were receiving public assistance as their sole or supplementary source of support. The general level of family income was low; 60% of the sample reported incomes of $40,000 and less which were below median family income for Connecticut during the time of the study.

Of the 70 children in the sample, 68 had mothers or mother substitutes and 43 had fathers or father substitutes. The other children lived with only one parent. Of the 68 mothers, most were high school graduates with or without some years of college (61.8%); eleven did not graduate from high school (16.2%) and 15 (22.1%) were college graduates. There were more college graduates among the 43 fathers (37.2) but a similar proportion of non high school graduates (16.3%).

Twenty-eight of the children (40%) were referred to early intervention primarily for developmental delay; 11 (15.7%) were referred for multiple disabilities; 10 (14.3%) were referred for mental retardation; 8 (11.4%) were referred for speech impairments. The remaining children were referred for hearing, vision and motor impairments, autism, health issues, and other reasons.

The children were referred to early intervention at the mean age of one year and thus were in the early intervention system for at least a year prior to their participation in the study. The study began at 24, 27 or 30 months for each child. At intake the children were at a mean developmental level equivalent to approximately 56% of their respective chronological ages. (Complete referral and intake developmental information appears in Table 2).

The Service Providers

A total of 367 professionals provided services to the 70 children during the year each child was in the study. The largest group, 144 (39.3%) were classroom teachers, and teaching assistants. Seventy-seven speech, occupational and physical therapists, 44 specialized instructors, 37 service coordinators, 34 medical personnel, and 31 other professionals also provided services and participated in the study.

Information regarding education and experience was obtained from about two thirds of these professionals. Among this smaller subgroup, the

providers had an average of about seven years experience with children in a birth to three population and their families. The physicians, therapists, and specialized instructors had more experience (13, 10, and 9 years, respectively) on average than the classroom teachers (6 years).

The highest education level attained by the classroom and other service providers ranged from high school diplomas to doctorates. Almost all of the specialized instructors (95%), half of the therapists (50%), and smaller proportions of service coordinators (20%), and classroom teachers and assistants (3%) had Master's degrees. (Job, education, and experiences profiles of the service providers are given in Table 3).

The Classrooms

The services for the 70 children in the study were provided by the state agency implementing services in natural environments as described in Part H regulations: in the home or in group programs in which typical children also participated. This model of using child care programs as group environments for toddler-age children was established as policy by this agency in 1988. At that time, the state agency closed all segregated centers serving toddlers with disabilities and developed relationships with community child care programs. These relationships included fiscal contracts to support the placement of children with disabilities part time in child care programs for early intervention purposes.

When their children reached 24 months of age, families who participated in early intervention under this state agency were given the option of

having their children attend a child care program part time at the early intervention program's expense. The funding for this participation was provided by the state to one of 86 child care programs who were contracted for this purpose. These programs were not required to meet any specific criteria. Rather, they had space available, were willing to enter a contractual arrangement with the state agency, were willing to support the child who had a disability, were willing to have specialists provide services in the child care classroom, and were willing to implement early intervention services through a consultation model. In order to use these programs as early intervention sites, it was necessary to assign a special educator from the state agency to each child who had a special needs. The special educator attended the program with the child. There were never more than two children with disabilities in any one child care classroom in which early intervention was delivered, though at times children with disabilities were in more than one classroom distributed throughout a child care center. The special educator could provide services for no more than two children receiving early intervention in one class.

Prior to 24 months of age, children received services from this agency in their homes or in other care giving environments arranged by their families. This latter group included children who attended child care programs at their families' expense for child care purposes. Only children who attended child care programs part time at the early intervention program's expense by the age of 24 months were included in the longitudinal study in order to maintain control of the number of hours children attended these natural group environments.

Thirty-five of these contracted day care centers located in various communities across the state participated in the study. Sixteen of the 35 centers provided services to only one child in the study; eight centers each provided services to two children; the other 11 centers served from one to three children each. Fifty of the 70 children remained at the same center for the entire time they were in the study but 17 changed sites once and three children were in three different sites during the year. Because some children changed sites during the year, some centers were used for only one or two age points. Most of the centers (25 of 35) 'hosted' from two to eight data collection points but a few centers, serving many children, were the location for many more; the maximum was 29. (A list of all participating programs with the number of children served and the number of observation points made at each site is found in Table 4).

Procedures

Enrollment in the Study

The Department of Mental Retardation (DMR), the state agency providing services in inclusive classrooms, funded placements for approximately 200 toddler age children placed in child care programs for early intervention purposes per year. The children entered these programs between the ages of 24-30 months and left at 36 months when they exited from Part H early intervention services. All parents who had

chosen to enroll their toddler age children in a natural environment group child care settings for early intervention were asked to participate in the study. In order to qualify for the study, the child could not be enrolled in any other group program, had to be attending the child care setting no later than their 27 month birth date, had to be receiving at least one hour per week of specialized instruction through DMR at the group site, and had to be receiving some form of therapy (occupational, physical, speech) at regular intervals either in a group setting or individually. If parents chose to participate in the study, they informed their child's early intervention teacher, who then contacted the study coordinator. The coordinator visited the parent(s) to discuss the purpose of the study and the type of information that would be collected until their child was 36 months old. After informed consent from the family was obtained, data collection procedures were implemented.

Data Collection Procedures

Data collection was scheduled at three month intervals for up to one year beginning when the child entered the study at 24, 27 or 30 months and continuing until the child was 36 months old. Data were collected through interviews with families and early interventionists, observations and formal assessments. The data were grouped under the categories of family status, child status and service characteristics. Family background information was collected upon entry into the study. Child status and service characteristics were collected on the three month schedule; family data were collected at the 24, 30 and 36 month collection points only. All data collection was scheduled to be within

two weeks of the child's age point. Table 5 contains a list of the information sources within each of the three categories which were used in this analysis and the schedule of when each was collected.

Two data collectors who had education (psychology or special education degrees) and experience in child development and were trained to reliability on the data procedures and instruments visited the child at the child care program (usually twice) to collect the data. Much of the family data were collected by mail, but a telephone interview or home visit was made if families had difficulty completing the forms or to follow up when the information was not received. During the program visits, one session was used to gather information on the classroom environment and the other to complete the developmental assessments. (All the classroom and developmental assessments are listed in Table 5.) Service information was obtained by interviewing the staff at the center and by follow-up phone calls with the teacher, service coordinator, or other provider. A copy of the child's current IFSP was obtained from the classroom teacher or from the regional DMR office.

Description of Instruments

Following is a description of each of the instruments and measures listed on Table 5.

Child Status

Battelle Developmental Inventory (BDI) (Newborg, Stock, Wnek, Guidubaldi & Svinicki, 1984). A standardized assessment which assesses key developmental skills in children birth to age eight, the full BDI consists of 341 test items grouped into five domains: personal-social, adaptive, motor, communication, and cognitive. A 3-point scoring system provides a measure that takes into account emerging as well as fully developed skills. The BDI was designed to accommodate a range of disabling conditions, and adaptations are permitted for children who have sensory or motoric disabilities that might restrict their ability to perform a target behavior. A total score and individual domain scores were calculated for each child's observation point.

Peabody Developmental Motor Scales (PDMS) (Folio and Fewell, 1983). This instrument is designed to evaluate gross motor and fine motor development from birth to 6.9 years of age. The gross motor section is subdivided into the five skill areas of reflexes, balance, non-locomotor, locomotor, and receipt and propulsion. The fine motor section is subdivided into the four areas of grasping, hand use, eye-hand coordination, and manual dexterity. Although the gross motor section does include a reflex skill area, the assessment is developmental rather than neuro-developmental in substance. A scale total and gross and fine motor subscales were calculated for each child's observation point.

The Preschool Language Scale-3 (PLS). (Zimmerman, Steiner and Pond, 1991) is a standardized scale developed as a diagnostic instrument to measure the language development of children 2 weeks to 6.11 years of age. The PLS-3 is organized into two standardized subscales: Auditory Comprehension and Expressive Communication. Both subscales are divided into four sections: language precursors; semantics; structure; and integrative thinking skills. Total and subscale scores were calculated for each child's observation point.

Social Network Scale. This short questionnaire was developed for this study to provide an indicator of the type of social network in which the target child operates. Parents were asked for the number and type of contacts (e.g., birthday party, story hour) their child had in the week prior to the data collection point

Social Status Scale. This questionnaire measures the teacher's perceptions of the social status of the target child as indicated by the frequency with which peers chose the target child to participate with them in activities and/or interactions (e.g., snack, buddy, play partner).

Demographic Background. Each parent was asked to complete a questionnaire as their child began in the study. One section of the questionnaire focused on the child's early intervention history, including the primary reason for referral.

Family Background

Demographic Background. The same questionnaire that requested information about the child had several sections that asked for information about family composition, parents' employment and education. From this information a score for social class was derived using the Hollingshead Four Factor Index of Social Status (1975). The assignment of parents' occupations to the index's point system was done independently by two project staff. After a satisfactory reliability was shown, consensus was reached on each disagreement.

The Family Needs Questionnaire (Dunst, Cooper, Weeldreyer, Snyder & Chase, 1988). This questionnaire measures a family's needs for different resources and supports. The scale includes 41 items organized into nine categories of needs (financial, food and shelter, vocation, child care, transportation, communication, etc.). Each item is rated on a 5-point scale ranging from (1) almost never a need to (5) almost always a need. The reliability and validity of the scale were established in a study of 54 parents and preschool and elementary aged retarded, handicapped, and developmentally at-risk children. The Family Needs Scale was specifically developed for work in early intervention.

The Family Resources Questionnaire (Dunst & Leet, 1987). This questionnaire measures the adequacy of different resources in households with young children. The scale includes 31 items rated

on a five-point scale ranging from (1) not at all adequate to (5) almost always adequate. The scale items are roughly ordered from the most to least basic.

The Family Support Scale (Dunst, Jenkins and Trivette, 1988). This scale measures a family's perceived level of support within the immediate family and personal network, as well as an assessment of support across broader spheres of the community. The scale includes 18 items.

The Personal Network Matrix (Trivette & Dunst, 1988). This measure provides a way of assessing a number of aspects of needs, resources, and support. A fully completed scale provides a graphic display of a respondent's personal social support network in terms of both needs and support sources. It also yields quantitative (frequency of contacts) and qualitative (dependability) information about the respondent's personal network. Collectively, the various bits of information obtained from the scale provide a basis for a help given and family to explore ways of mobilizing resources for meeting needs. For this study, only the quantitative data (frequencies of personal contacts) were used.

Setting Characteristics

Early Childhood Environmental Rating Scale (ECERS) Harms & Clifford, 1980). This scale is designed to give an overall picture of

the environment for children and adults in preschool settings, including the use of space, materials, and activities to enhance children's development, the daily program schedule, and the supervision of children. The scale consists of 37 items organized into seven subscales: (l) Personal Care Routines, (2) Furnishings and Display, (3) Language-Reasoning Experiences, (4) Fine and Gross Motor Activities, (5) Creative Activities, (6) Social Development, and (7) Adult Needs. The scale was initially developed for use in preschool programs (day care, Head Start, nursery school) for predominantly non handicapped children. Each item is scored from 1 (inadequate) to 7 (excellent), and an overall program index is calculated by summing all of the item scores. This scale was used for only the 36 months observations.

The Infant Toddler or Early Childhood Environment Rating Scale (ITERS) (Harms, Cryer, & Clifford, 1990). The ITERS is a modification of the ECERS scale for use in toddler environments. The ratings and the scoring are the same but the items and subscales differ. The scale consists of 35 items organized into seven subscales: (l) Furnishings and Display, (2) Personal Care Routines, (3) Listening and Talking, (4) Learning Activities, (5) Interaction, (6) Program Structure, and (7) Adult Needs. This scale was used for ages 24 - 33 months.

Activity Logs. The Activity Log instrument, developed for this study, was used to collect information about the amount of time spent in several types of activities in the classroom. These

activities were categorized as care giving (eating, drinking, dressing, undressing, toileting or diapering, and washing); circle time (structured class activity usually at opening or closing of the session); free play (unstructured time during which the child had free choice to be involved in any classroom play activity); goal directed (activity which had a predetermined purpose and structure which was planned by a teacher and had specific behaviors associated with it such as an art activity, story time, motor activity); and transition (moving from one activity or routine to another including coming or leaving). The data collector recorded the activity in which the target child was involved every 10 minutes. In addition, the data collector also scored whether teacher of other staff was directly intervening in or just monitoring the activity in which the child was involved.

Classroom Profiles. Information about the child's classroom hours, staff, and classmates was obtained from the teacher every three months.

Service Characteristic Profile. Information for each of the 16 early intervention services mandated by Part H included if the child received the service currently, the intensity of services received (expressed as hours of service per week for most services), where services were received (at the early intervention program's center, in the child's home, or at the provider's office), whether the services were received in or out of a group environment (out of group included individual services at home or office, and pull out

services at the center; in group services included any group environment at the center or elsewhere), and whether the services were delivered directly by the specialist or by the classroom staff after consultation with a specialist.

Individual Family Service Plans. The outcomes listed on the IFSP were initially categorized as to whether they were child or family related, related to both, or related to neither child nor family. A family outcome was defined as either having a mention of any family member in addition to the enrolled child, or listing an action which would benefit any family member in addition to the enrolled child (e.g., 'The family will receive translation services during medical visits' or 'The family will receive respite services'). Some identified outcomes listed on the IFSPs were actually procedural plans for the team or a specific provider; e.g., 'The child will receive service coordination by . . . '. Developmental outcomes which targeted specific developmental or behavioral skills were scored as child related unless other members of the family were also mentioned as part of the outcome (e.g., The child will talk; The child will use a motorized device for mobility; The child will eat by himself). The child outcomes were further broken down into areas of development such as motor, communication, cognition, self help, social or health.

VII. RESOLUTION OF LOGISTICAL AND METHODOLOGICAL PROBLEMS

Given the reliance on voluntary participation, the longitudinal nature of the approach, and the breadth of the data collection, it is not surprising that there were several logistical problems encountered during recruitment and data collection. Several procedures were changed to accommodate these newly identified needs. Unfortunately some of the accommodations led to methodological issues which themselves had to be resolved. The discussion below reviews all the difficulties starting with those necessitating procedural changes and following with the methodological issues encountered and the resolutions reached.

Logistical Problem

With help and insights from the DMR regional supervisors whose monthly meetings the project director and coordinator attended, the reliance on teachers to identify and recruit eligible families from their caseloads was determined to be an unnecessary burden on the teachers, and in some instances, a barrier to offering all eligible families an opportunity to consider participation.

Resolution

The project director, project coordinator and DMR central directors devised a new recruitment procedure. A new release form was created for distribution to all families during their DMR intake interview. Signing

this release form indicated that the family was interested in learning about all ongoing and upcoming research and training activities conduced under the auspices of the division of Child and Family Studies, Department of Pediatrics, University of Connecticut Health Center. The information released included the child's name, family address and telephone, and the child's birth date. Under this new procedure the project coordinator was able to contact the appropriate families directly. The procedure maintained families' confidentiality, reduced the amount of personnel time required and widened the base of families approached for participation.

Logistical Problem

Another instance of asking teachers for help beyond their available time and/or awareness occurred during data collection. The teachers were the designated source of information for the children's IFSP and actual service profiles. Unfortunately, but not surprisingly, many teachers had little time to fill out the long form needed to detail up to 16 types of service, did not understand the nuances of the complex form, had knowledge only of services delivered at the center, or had otherwise incomplete knowledge of all services received. In addition, IFSPs were not always available from the teachers.

Resolution

The initial procedure of leaving the services profile for the child with the teacher to mail back with other project forms was rejected in favor of a

procedure with more active exchange between teacher and project staff. The project coordinator personally contacted the teacher by telephone and completed the form step by step with her, obtaining information when possible or suggestions concerning other sources of information when the teacher did not have complete information regarding a particular service. Other sources of information included the IFSP, therapists, parents, DMR, etc. A concerted effort was also undertaken to obtain all IFSPs needed from the DMR Regional office.

Logistical Problem

Parents, like teachers, were usually willing and cooperative participants in the project. There were problems, however, in obtaining all the information they were responsible for supplying at every age point. It was also clear from an inspection of early data that there was not a lot of change in three months in the family data.

Resolution

A decision was made to collect family data only at the 24, 30 and 36 month data collection points. Families of children who began the study at 27 months were given their first packets three months later.

Logistical Problem

Recruitment for this project was coordinated through the DMR's Early Connections Program which had originally requested the undertaking of

this project. Despite the desire of DMR supervisors, the efforts of supervisors and staff, and procedural changes already discussed, there were times and regions for which recruitment was slower or more difficult than desired. The resolution of this difficulty was attempted both procedurally and methodologically.

Procedural Resolution

The project coordinator and project director worked with DMR Early Connections leadership to promote recruitment. One of the key types of effort was the project coordinator's attendance at meetings to increase awareness of and interest in the project. During the first year of the project this included quarterly Advisory Board meetings, monthly DMR supervisor meetings, seven meetings with DMR regional staff, 14 visits with classroom program personnel, a meeting with the State Department of Education, and one individual meeting with a family.

Methodological Resolution

Estimates obtained from DMR supervisors for the number of toddlers they projected would meet the original eligibility requirements (beginning at age 24 months) made it clear that despite the best efforts at recruitment, the total number would be insufficient. Thus, in addition to the procedural changes, a decision was made to expand the eligibility criteria to include initial enrollment of children up to 30 months of age.

Methodological Problem

In addition to overall difficulty of recruitment, the original DMR projection of eligible children within each of the four design groups was not confirmed by the count of children actually enrolled in the project. At the end of the first year, the percentage of toddlers receiving full time specialized instruction in the sample far exceeded the number receiving it part time (37 of the first 41). The proportion of children receiving therapy in and out of group was also not equal, although not as dramatically unbalanced; 27 of 41 in the first year received therapy in group. Further, as recruitment and data collection continued, it became obvious that the assignment to therapy condition was not a simple dichotomous choice. Several children received one service in group and another out; some received the same type of therapy from two providers, one in group and another out. Complicating matters further was the longitudinal nature of the study. Although some children did receive therapy services uniformly in or out of group at a point in time, they could not be easily categorized for the study because their situation was likely to change at the next data collection point.

Resolution

The original four group quasi - experimental design had to be discarded in favor of one that would allow recruitment to be maximally effective and one that yielded a sample that approximated the existence of the staffing patterns as they existed in the population of children receiving early intervention services. The decision was made in steps; first full or

part-time instruction and then therapy in or out of group were discarded as control variables. The new design called for recruitment of a representative sample of children served by DMR, the collection of all information about the range of services received, an analysis of service delivery, and an analysis of the effects of any emergent service delivery patterns on child or family status.

Methodological Issue

The expansion of eligibility for age at intake from only 24 months to 24, 27 or 30 months helped ease the overall recruitment difficulties but resulted in a analytic problem. In a study focused on development and change, the starting age point from which to measure change was not uniform. If change can be measured only for those with 24 months and 36 months data, the size of the sample would immediately be restricted to, at most, those whose intake was at 24 months. Similarly, if the entire sample were used but only the data from 30 months to 36 months were thus available, the information concerning earlier ages would be lost.

Resolution

A plan of analysis was worked out to achieve maximal use of available data and still make comparisons between the same age points. The final full sample of children was used for an exploration of changes from age 30 months to age 36 months, age points where all 70 children were enrolled. A similar exploration of change from age 24 months to age 30

months was undertaken using the subset of 31 children enrolled at age 24 months. Additional cross sectional analyses were done at ages 30 and 36 months, again utilizing the entire sample.

VIII. RESEARCH FINDINGS

Overview

Two preliminary analyses were run; the first to check on instrument reliability and the second to check the comparability of the subsample of 31 children with the other 39 children not available at the youngest ages.

The main analyses focused on the questions outlined above:

Comparisons of changes in child and family status variables at ages 24 and 30 and at ages 30 and 36 were run to explore how children with disabilities and their families developed during the time the child was receiving early intervention services.

Extensive analyses of service provision including the prevalence, intensity, location, and modality of each of 16 mandated early intervention services and of classroom demographics, activities and environmental quality were run to provide a full description of the nature of early intervention classrooms and services.

The exploration of services was then extended to determine whether distinctive patterns of service delivery could be identified.

Finally, additional analyses were run to examine whether service delivery (using the emerging patterns if found) was related to child and family status or its change.

Reliability

Reliability information was obtained for all measures that required judgments by project staff. This included the developmental assessments, ratings of classroom environmental quality, identification of classroom activity, and the Hollingshead measure of social economic status. For all but the last measure, independent coders were trained on the data procedures and instruments to a standard of at least 80% agreement prior to the beginning of their coding. Throughout data collection, 20% or more of the data set were independently collected or coded by two research assistants. The percent of agreement (number of agreements divided by the total number of decisions [agreements and disagreements] multiplied by 100) was the main calculation for all instruments. For the Hollingshead measure, two coders assigned occupational status points for one or two parents (as appropriate) for all the children based on a list of occupations in each status category. Due to the variety of occupations and the ambiguity of job titles, subjective judgment was required. A inter-rater correlation of the resulting total social economic status scores (including the non subjective educational points) was used as the reliability measure.

The mean percent agreements across instruments ranged from 90% to 99%. A small reliability sample for ECERS (15% of N, the only one less than 20% of data collected) was lowest at 90% agreement; but when combined with ITERS for overall agreement on environmental quality,

the reliability sample represented 21% of the total and had 94% agreement. Agreement on the developmental scales was very high, ranging from 96% to 99%. The inter-rater reliability coefficient for the Hollingshead scale was .96. (Complete reliability information is listed in Table 6.)

Comparability of Age Samples

As explained above, recruitment difficulties necessitated the extension of intake criteria to include children up to 30 months of age. This resulted in the availability of information about children at 24 months of age to be limited to only 31 of the 70 children in the study. The analyses of children's development and family status change was done in two parts: on the smaller sample for changes between 24 months and 30 months and the full sample of children for changes between 30 months and 36 months.

Several comparability checks were run to determine if this split in the analysis would be confounded by any sample differences. The subsample was compared with the remaining 39 children of the sample on demographics and referral characteristics (collected at intake) and on developmental status, family status, and service profile at age 30 months (the youngest age for which data were available for all children).

Demographic profiles of each subsample (see Table 7) suggested that the children in the early age subsample were more likely to be girls, were more diverse racially (lower proportion of Caucasians), were more likely

to be raised by grandparents, foster parents, or adoptive parents, and were less likely to have families who received public assistance. None of these differences was statistically significant, however.

Children in the subsample began early intervention services at a younger age and were more likely to be referred for mental retardation or developmental delay but again these differences were not significant (see Table 8).

There were no differences at all between the two groups on developmental age equivalencies at age 30 months on any of the three indices or their subscales. The average age equivalency scores ranged from 14 months to 17 months on most of the measures (see Table 9).

Comparisons of family status at child's age 30 months were made using the total scores for the four family scales: family support, personal contact network, family needs, and family resources. There was a slight difference on the Family Needs Scale but, as with the other small differences, it did not reach statistical significance (see Table 10).

An exploration of the service profiles for the two subsamples at 30 months indicated that the services for the two groups of children were basically similar, but a few isolated differences did occur. For service planning, represented by the IFSPs, the only difference was in the prevalence of family related goals. Seven of the IFSPs of the 30 children (23%) in the early subsample for whom IFSPs were available had family goals but only three (less than 8%) of the other 39 did (see Table 11).

Fewer children in the early participation subsample received a medical evaluation at age 30 months than among the other children in the full sample. The data also showed that fewer children in the subsample received health services but more received speech services. Also, more of their families received social work services. Only the first difference, however, was statistically significant. There were no differences between the samples on any classroom characteristics including demographics, teacher experience, activities, or environmental quality. There also were no differences in the intensity of any services received. Children in the subsample did receive a lower percentage of their service in providers' offices but that was the only difference in service locality or modality. (See Table 12 for a comparison of the service profiles of the children in the two samples).

In summary, two subsamples were compared demographically at intake and for comparability of developmental level, family status, and service profile at age 30 months. The samples were shown to be very similar with only a few isolated differences between them, most of which were not statistically significant. The two part analyses of change can be done without great concern for sample differences. It should be noted that results from these two subsamples were not directly compared; rather, results from the early participation subsample and the entire sample were used in the study. The subsample should obviously be more similar to the entire sample it is part of than it is to the "other half".

Child and Family Status Change

The first area of inquiry was to explore how children with disabilities and their families developed during the time the child was receiving early intervention services. All of the child and family variables were analyzed for change from 24 months to 30 months for the early intake subsample and from 30 months to 36 months for the entire sample. For the children, the measures included the three developmental indices and their subscales, the social network, and social status measures; for the families, the measures included the four family scales: family support, personal contacts, family needs, and family resources.

Developmental Indices

Evidence of the children's development was clear and consistent. There was statistically significant evidence of growth on every developmental measure over the six month period for the respective samples (see Table 13). Of more interest to a study of early intervention were comparisons of development rates while receiving services with the previous rates of development for the different domains. For this analysis, proportional change index scores were calculated for each of the measures over the 24 to 30 month period and the 30 to 36 month period. These scores represent a ratio of the average monthly gain over the six months compared with the average monthly gain during the prior two or more years. Ratios larger than one indicate an increased rate of developmental progress and ratios less than one signify a slower rate of growth.

As can be seen in Table 14, with the exception of the Peabody Motor Scales total and gross motor subscale for the 24- 30 month period, all the ratios were greater than one indicating a constant or increased rate of development. For the smaller sample at 24 - 30 months, only the Batelle Development Index (BDI) personal social subscale and the auditory subscale and totals for the Pre-School Language Scale (PLS) indicated significant increases in rate of development. The slowing of the rate of gross motor development as measured by the Peabody gross motor subscale was also statistically significant between these age points.

For the total sample between 30 months and 36 months, there were statistically significant increases in the rate of development on most measures. The exceptions were the Peabody gross motor subscale, Peabody total scale, and the PLS expressive language subscale. These scales also showed increases in the rate of development but none reached statistical significance. (Figures 1 - 3 illustrate the changes in developmental rate for three of the subscales.)

These data must be interpreted with caution. Wolery (1983), although a strong advocate of the proportional change index as a good measure of change, warned that using the entire pre-intervention period to obtain a single measure of rate of development could be misleading because children rates of development show natural variation over time. If the age point beginning the measurement period (24 months or 30 months in these analyses) were established just prior to a period of greater development, the proportional change index could be artificially inflated.

Another difficulty is that these initial age points signify the children's intake into the study rather than the onset of early intervention services.

With the caveats in mind, the proportional change index scores at least suggested that the children benefited from their early intervention services as evidenced by an increased rate of development across most developmental domains. Except for the language measures, the increase in rate was seen more clearly during the 30 month to 36 month period.

Social Measures

There were no indications of age related change for the social measures between 24 months and 30 months or between 30 months and 36 months. The number of all and peer aged contacts showed no change for either the subsample or the complete sample[1]. For the social status measures, the children in the subsample were rated as minimally (and non significantly) less likely to be sat near or selected as a buddy at age 30 than at age 24 months. For the entire sample between ages 30 and 36 months, there was some evidence of increased social status. Most of the measures showed an increased likelihood of the children being chosen but only the "choose as buddy" measure was significant (see Table 15).

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1 The collection of social network and other family completed forms was difficult. The Ns for analyses of these measures were smaller for the full sample and for the already smaller early intake subsample.

Family Measures

Similarly, there were only a few indications of any family change during the time that the children were in the study. There were no differences between ages 24 and 30 months. The amount of perceived support did increase significantly for the families of the 42 children in the full sample who completed the family support scale at both the 30 and 36 month age point. The other scales showed no changes (see Table 16).

Summary of Child and Family Change

In summary, this descriptive study clearly showed the expected development of children as they aged and the relative stability of families' situations across a period of time as short as six months. There was some evidence of change in families' perceived support and in teachers' ratings of the social status of children but no evidence of change for social contacts. The data suggested that the children's developmental progress increased its pace for personal social and language between the ages of 24 and 30 months and for most aspects of development between ages 30 and 36 months. Gross motor development was an obvious exception for both age spans.

Child and family status and measures of change will be revisited after an exploration of patterns of service provision.

Characteristics of Service Provision

An extensive exploration of all aspects of service provision was made for the 70 children in the sample. The analyses focused, with few exceptions, on all age points combined. This was done for three reasons: first, combining ages allowed the data to provide the broadest overall picture of early intervention services for all toddlers; second, age specific preliminary analyses were conducted which showed few differences in service delivery across the short time span represented in the study; and finally, looking beyond age differences avoided the methodological issues (discussed earlier) presented by staggered study intake ages and the resulting sample differences that would have raised questions about the validity of any age relationships found.

Classroom Demographics

All the children in the study attended center based inclusive programs. The average classroom had nine children, two of whom were receiving services from DMR. There was an average of a little over three staff assigned to each class (including the specialized instructor) with an average of 12 years experience working with children up to three years old. The children were in the class for an average of three hours at a time, usually two or three times a week, yielding a total class time of approximately 6.5 hours per week. (The classroom demographic information is summarized in Table 17.)

Classroom Activities

The study child's primary activity in the classroom was observed every ten minutes and categorized as free play, goal directed activity, circle, adult provided care, eating, or transition. The most common activity was free play, accounting for 43% of the observations; eating and transition were the next most common, accounting for 14% and 15% of the observations, respectively. Goal directed activities, including instruction and therapy, accounted for only 12% of the observations. Across all activities, the adult (teacher or therapist) most closely involved with the child took a direct interventionist role approximately 60% of the time. (Figure 4 depicts the distribution of time across activities).

Classroom Environmental Quality

The children's classrooms when aged 24 to 33 months were rated on the Infant Toddler Environmental Rating Scale, and when aged 36 months on the Early Childhood Environmental Rating Scale. On both scales, the average overall classroom rating was approximately 4.5 on a seven point scale. For both scales, also, adult needs, ranked 5.1 and 5.0 on ITERS and ECERS respectively was the highest ranked subscale. The lowest ranked subscales (learning for the ITERS and creative activities for the ECERS) averaged about 4.0 on both instruments. Thus, most ratings were clustered a little above the mid point of the scale. (Total and subscale scores for both instruments are listed in Tables 18 and 19).

Service Planning

The developmental domains within which the service plans for these children identified outcomes provided one view of the children's service profiles. Each outcome was classified as primarily relating to the child, family, both or neither, and by the functional domain to which they related. Overall, only 13.2% of the IFSPs had any identified outcomes that related primarily to the family.

The domains of development fall into three clusters based on the prevalence of outcomes identified within each of them. The speech and motor areas were extensively represented among the outcomes in the IFSPs, present in 87% and 63% of the IFSPs, respectively. Outcomes related to playing, self help skills, and cognitive skills were each identified in about one third of the IFSPs (41%, 36% and 32%). Outcomes relating to the other areas -- vision, behavior, health, and the integration of two or more domains -- each were found in ten percent or fewer of the IFSPs. Across all domains, the average number of outcomes identified was three to four. (Table 20 summarizes the IFSP information.)

Service Prevalence

The prevalence of service in each of the mandated service areas was analyzed two ways -- by the percent of children who received the services at any of the age observation points and the percentage of all age observation points at which the service was provided. For the first analysis, specialized instruction was provided to all children during their

early intervention years (it was one of the eligibility criteria) as were service coordination services; speech and language services were provided to over 86% of the children; physical and occupational therapy were each provided to 63% of the children; transportation services were provided to 55%. All other services were less prevalent: vision and medical evaluation services were provided to about one-fourth of the children; health services, nursing, nutrition, assistive technology, social work, and family counseling were each provided to between 10% and 20% of the children; audiology was provided to fewer than 10%.

For the second analysis, at the individual age points, the prevalence rates were quite similar, usually just a few percentage points lower. The exceptions to this pattern were health and medical evaluation services for which the age point prevalence rates were considerably lower, suggesting that these services were less likely to be provided at multiple age points. (Percentages for both distributions are listed in Table 21).

A final approach to service prevalence was the examination of the continuity of services provided. By comparing whether each service was provided at contiguous[2] age points, the prevalence of services added and dropped were calculated. Given their high overall prevalence, it is not surprising that specialized instruction, speech, and service coordination services were discontinued after their provision at an earlier age less than two percent of the time. Vision and transportation services also were unlikely to be discontinued; services were not provided in only

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2 By study design, contiguous age points were three months apart; 175 of 192 subsequent observations fit the design; due to missing information, 16 observations were six months later, and one was nine months later.

about one percent of age points following the provision of the service. In contrast, audiology, nutrition, medical evaluation, and family counseling were each discontinued at subsequent age points 25% or more of the time.

There was similar variation in the likelihood of services being added at an age after not being provided at the previous age. Again, specialized services, service coordination, speech, and transportation were all constant with few instances of services being added. Physical therapy was also unlikely to be added at a later age if not provided earlier. Audiology, family counseling, and social work were again shown to be provided intermittently, as were health services, each being added 20% or more of the time. Vision services, which were unlikely to be discontinued, were commonly added at later ages (21%). (A complete depiction of service continuity is presented in Table 22).

Service Intensity

The intensity of most of the services (all except medical evaluation, health services, service coordination, and transportation) was best expressed as the average number of hours per week provided for those children receiving the service. The intensity, so measured, varied considerably across services. Specialized instruction was by far the most intense; the children received an average of six hours of service per week from a special education teacher. The next highest intensity level was nursing which was provided to the few children receiving it for an average of 2.2 hours per week. Family counseling services were provided an

average of 1.9 hours per week. All of the of the other services averaged less than an hour per week; the most common services, speech, physical therapy and occupational therapy, received .5, .7, and .6 hours, respectively. Totaling the various services, children received an average of 1.7 hours of services other than specialized instruction.

The service intensity of the other services (medical evaluation, health services, service coordination, and transportation) were not provided in a hours per week mode. Medical services and service coordination were usually provided twice a year with an appointment lasting an indeterminate amount of time. Health services also had no fixed duration for an appointment, occurring more frequently (six or more times per year) or just on an as needed basis. Transportation services were provided an average of 3.5 trips per week. (Intensity of all services is summarized in Table 23).

Service Location

Services were provided to the children in a variety of settings. Specialized instruction was provided at the early intervention setting and at the child's home. A little over half of the children at an age point received instruction only at the center. For most of the remaining children, service was provided at both the center and home. For only two children at only one age each was specialized instruction provided only at home. Factoring in intensity of service, however, service provision was not as evenly split between the locations. On average, approximately

96% of the specialized instruction service hours were provided at the center.

The other services were provided in the center, at home, or in the provider's office. Speech services were provided primarily at the center only; physical and occupational therapy were usually provided only at the center or only at home; nursing was provided at home only or at the home and center; audiology services were delivered only in the home, at home and the center, or only in the provider's office; family counseling, social work and vision services were provided at the center, in the home, or at the provider's office but not in any combinations; health services and medical evaluations were always at the provider's office; nutrition services were primarily offered at the provider's office; service coordination was almost always provided at home; assistive technology services were provided at the center and at home separately or in combination. (Figure 5 illustrates the variation in location of service provision for each of the services; Table 24 provides the specific percentages.)

Service Provision In or Out of Group

The provision of services (other than specialized instruction) within and away from a group setting was one of the service characteristics the study was originally designed to explore. As discussed earlier, it was felt, during the study, that the proportion of services received in and out of group were not equally balanced and that children did not experience only one type of service provision. The final statistics confirm the

second problem but show that there were was less of a deficit of children receiving services out of the group. For any one age point, 41% of the children received all their auxiliary services[3] in group, 41% received all their services out of the group, and 18% had mixed in and out of group provision. The average for all children was 60% in group and 40% out of group. The imbalance was more evident and the variability over time was clear when children's full early intervention histories across all ages were examined. Only 30% of them received services exclusively in or out of group (23% exclusively in group and 7% exclusively out of group).

Specific services showed a range of provision patterns. Specialized instruction was provided almost entirely in group (96%). Speech and language services (75%), assistive technology (58%), physical therapy (55%) and occupational therapy (50%) all were provided in group at least half of the time. Audiology (12%), social work (6%), and nutrition (0%) were seldom provided in group. (Information on provision in and out of group across services is depicted in Figure 6).

Direct and Consulting Service Provision

Most of the services were provided directly to the children rather than using a consulting model. For several services, including specialized instruction, audiology, family counseling and training, social work, and assistive technology, all the service provision was direct. The proportion of other services provided directly ranged from 86% direct (nursing) to

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3 For this analysis, service coordination, health services, and medical evaluations were not included because the intensity information was not available in hours per week.

74% direct (speech and language). Across all services except specialized instruction, the average was 79% direct and 21% consulting. (The percent of direct service provision for all services is depicted in Figure 7.)

Multiple Service Providers

Another aspect of service provision explored was the number of different professionals who provided the same service to the child during the same time period. Unfortunately, provider information was not readily available for some of the services, especially health and medical services. Of the services with more complete information, assistive technology was most likely provided by multiple professionals; 18.2% of the service provisions were offered by a second provider. None of the children for whom complete service provision information was available had more than one provider of nursing, audiology, family counseling, nutrition, social work, vision, or service coordination at one time. Of the most common services, approximately three percent of the service provisions were given by a second physical therapist or second specialized instructor, five percent by a second occupational therapist, and less than one percent by a second speech and language specialist. (The known information concerning number of providers is listed in Table 25.)

Team Information

Several questions were asked of the service information provider concerning the early intervention teams brought together for each child.

Most of the teams met monthly (61.3%) or twice a month (21%). Approximately, three quarters of the teams (74%) reported full team attendance. The average size of the team was four to five persons, 71% of whom were service providers for the children. Conversely, an average of 66% of a child's providers at one time were part of his or her team.

By role, the most consistent member of the teams were the specialized instructors; all 70 children's specialized instructors were on their team at each age point observed. Speech and language, physical, and occupational therapists were usually on the team (83%, 76%, and 64%, respectively). Service coordinators were included on the team about half of the time (51%) but classroom teachers (12%) and parents (2.4%), were seldom on the team. Medical providers were not reported on any of the teams. Only a small proportion of the teams reported having an explicit team leader. (Team characteristics are detailed in Table 26).

Summary of Classroom and Service Provision Characteristics

During their third year (age 24 - 36 months), the 70 children with disabilities in this study were typically in classrooms with one other child with disabilities and approximately nine children total. They were in the classroom three hours a day, approximately two to three times per week. The environment of the classrooms was rated minimal to good. The children spent almost half of their class time in free play.

They all received specialized instruction and, consistent with their IFSPs, most received speech and language services and more than half received

one or both of the motor therapies. One quarter or fewer of the children received one or more of the other services. Most services were provided at the center or at home with more than half of the services other than specialized instruction delivered in groups and directly rather than as a consultation. Other than assistive technology, there was a very little likelihood of more than one provider for any service.

The intensity of services other than specialized instruction was low with most services provided for less than an hour. The receipt of specialized instruction, speech, physical therapy, occupational therapy, and transportation services was fairly consistent from age to age; the other services were more likely to be added or dropped. Teams were established for all children, usually with four to five members, including the specialized instructor.

Relationships Among Service Provision Characteristics

This study was conducted to compare several different patterns of service delivery. Despite the loss of the originally designed comparison groups, the relationships between different aspects of service were explored. The following questions were investigated using bivariate correlations:[4]: What demographic characteristics of classroom and teacher background influenced the environmental quality of the class? How were classroom activities related to other services provided to the children? What characteristics of the service team were related to services provided? Was

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[4] Because some of the intensity measures were ordinal rather than interval data, the prevalence measures were dichotomous, and some of the other variables had extreme distributions, a non parametric alternative Spearman *rho* was chosen.

the provision of one service related to the provision of another? Was the location or modality of a provided service related to its intensity?

Classroom Characteristics

Within the inclusive classroom, the presence of more children with disabilities (the range in the sample was one to five)[5] was associated with less of the time in free play activity (-.12)[6] and more in activity transition (.18). There was also a direct relationship between the number of children with disabilities and higher ratings on the ITERS (.19) or ECERS (.31) scale. Higher rankings on the environmental scales were also associated with more circle time (.26 for ITERS only) and a higher percent of the time when the specialized instructor is judged to be taking an active interventionist role rather than just monitoring the children's behavior (.22 and .44 for ITERS and ECERS, respectively).

There were also relationships between services provided at the center (higher percent of center based) and the classroom activities. Less circle time and more transition time was associated with higher percentages of all therapy at the center, specialized instruction at the center, and more therapy provided in group settings.

The mean amount of experience the classroom staff had working with children ages birth to three was also related to several service

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5 The larger numbers were not outside of the eligibility criteria. Many of the classrooms were large with double and triple classes and proportionately large staffs.

6 All correlations discussed are significant at p. < .05 or greater.

characteristics: less circle time (-.24), higher proportion of specialized instruction at the center (.27), and lower ratings on the adult needs and learning activities subscales of the ITERS scale. (Correlations among the variables related to classroom demographics, activities, and environmental quality are provided in Tables 27 - 31. The relationships of classroom demographics and activities with service location and modality are provided in Tables 32 and 33.)

IFSPs and Service Prevalence

Since the IFSP is the document representing the service planning process, a relationship between identified outcomes and receipt of service would certainly be expected. The series of correlations between the variables indicating the presence of outcomes in the domains of motor activity, speech and communication, and vision with the variables indicating the provision of physical therapy, occupational therapy, speech and language, and vision services were all significantly different from zero but were not as high as predicted. The highest correlation between receiving PT and identified motor outcomes), was only .60; the others ranged from .23 to .36 (see Table 34).

Prevalence of Different Services

Based on similarity of domain, it would be expected that some combinations of services would be received together. For example, children with motor disabilities might receive both PT and OT, children with health related disabilities might receive nursing, medical

evaluations, nutrition, and other health services, and families struggling with adjustment might receive social work and family counseling services. Thus, the variables indicating receipt of these related services would be expected to be correlated. Each of these combinations were explored.

The receipt of physical therapy and occupational therapy was, in fact, related (.33), as was the receipt of health and nutritional services (.38). However, none of the other combinations of health related services were related as expected; in fact, nursing and health services were significantly inversely related (-.15). The last finding suggests that perhaps the two services were being used as alternatives approaches. The last combination, family counseling and social work, was not related at all.

Although many of the expected relationships were not present, the provision of several of these services was related to the provision of others. Health services were positively related to speech and language (.20) and family counseling and training was directly related to audiology (.43) and inversely related to physical therapy (-.15).

Three of the services were most highly related to the other services -- assistive technology, transportation, and vision. Assistive technology was significantly related to almost every other service: speech (.13), physical therapy (.27), occupational therapy (.28), nursing (.19) audiology (.34), family counseling (.15), medical evaluation (.26), nutrition (.28) and vision (.37). Vision was related to physical therapy (.22),

occupational therapy (.32), audiology (.16), health services (.20), medical evaluation (.22) and nutrition (.35). Transportation was inversely related to speech (-.20), physical therapy (-.26), and occupational therapy (-.49). It was positively related to family counseling (.25) and health (.13). (Table 35 contains the full matrix of service prevalence indicators and their interrelationships.)

Relationships Within Service Areas

Stronger relationships were found among the characteristics of a single service provision for those receiving that service. For each of the services, the intensity of services provided was correlated with the mean percentage of that service provided at each location, in and out of group, and directly and in consultation. Further, the location and modality characteristics were correlated with each other.

For specialized instruction there were no relationships between intensity and locality or intensity and any of the modality variables. Among the other services, speech and language, physical therapy, and occupational therapy all followed the same pattern: higher intensity levels were associated with a smaller percentage of the service being provided at the center (-.25, -.47, and -.56, respectively), in group (-.26, -.46, -.61, respectively), and a larger percentage of the service being provided directly (.32, .36, n.s., respectively). Some of the less prevalent services followed the opposite pattern: for audiology, family counseling and training, vision, and assistive technology, greater intensity was associated with a higher proportion of service provided in group (range of correlations from

.44 to .78). For vision and audiology, greater intensity was also associated with a higher proportion of the service being center based (.65, .79).

The location each service was provided (in center, at home, or provider's office) and whether the service was provided within a group setting or not were highly correlated for all services. The correlations between the percent of the service received at the center and the percent received in group ranged from .70 for family counseling to a perfect 1.0 (for specialized instruction, audiology, and assistive technology); the mean for all services except specialized instruction was .94. These results were not surprising since the center was the location for the most obvious group. The "low" correlation for family counseling fits this explanation well since group services within the provider's office or other location was a reasonable alternative approach to service delivery. Whether services were provided directly or through consultative services was not related to the location or group nature of the service for most of the specific services or overall. The exceptions were physical and occupational therapy where consulting services were more associated with a center location and out of group provision (significant only for PT). (Table 36 provides the correlations of intensity with location and modality; Table 37 provides the correlations between location and modality.

Relationships With Team Characteristics

Several characteristics of the team were related to service prevalence, intensity, location and modality. A greater likelihood of the team fully attending the team meetings was associated with fewer services (-.18), less intensive service (-.18), greater proportion of services at the center (.32), and a greater proportion of services in group (.29). Not surprisingly, team size was associated with greater number of services provided (.18), and a larger total number of hours of auxiliary services (.19). Receipt of more services (.36), more intensive service (.28), a higher proportion of services at home (.18), and through consultation (.13) was related to teams with a higher proportion of service providers as members. The percent of providers who were on the team (the reciprocal relationship from above) was also related to the location of services (-.26 with percent of services at office) and in a consulting mode (.13). Not surprisingly, however, the percent on team was likely to be higher when there were fewer services provided (-.15). Among the potential team members, the specialized instructor, service coordinator, and parent were the ones relevant to all teams. Of these, the presence of the specialized instructor was related only to greater total service hours (including specialized instruction) (.22). The presence of the service coordinator was associated with more direct services provided (.21) and a higher proportion of services provided in offices (.20). A parent on the team was associated with a higher proportion of office locations for service (.25). Some teams designated a team leader; this occurrence was associated with a greater proportion of consulting services (-.13). (A full matrix of team related correlations is presented in Table 38).

Summary and Conclusions About Service Relationships

Several caveats are appropriate before an interpretation of these correlational data is presented. Despite selecting only certain relationships for exploration (from the over 7500 possible for all combinations of key service variables), over 1100 correlations were calculated. Thus, more than 50 correlations could be found to be statistically significant by chance alone.

Second, despite their being statistically significant, most of the correlations were small, many in the .10 to .20 range. Although the relationships might be reliable, the variables account for only a very small percent of the variance in the paired variable (four percent or less). Thus, they might not be conceptually significant.

With these caveats in mind, several summary statements and conclusions can be made.

- The proportion of time in the classroom spent in free play and circle were related to class size and amount of services provided in the group setting.

- IFSP identified outcomes in the relevant domains were related to the provision of speech, PT, OT and vision services but the relationship was not as strong as would be predicted.

- The provision of many similar services, such as those involved with health or counseling were not related or only weakly related, contrary to expectations.

- Provision of assistive technology and vision services usually accompanied many of the other services.

- Provision of transportation services was inversely related to the provision of many of the other services.

- Most of the specific services were most likely to be provided directly by the specialist in one location (e.g. specialized instruction, speech, etc. at center, nursing and service coordination at home, medical services at the provider's office) and in or out of group (e.g. speech in, audiology out). Increased intensity of service was related to higher proportions of the less likely location and mode of provision suggesting, perhaps, that a "basic" level of service was provided in the usual manner and higher levels added other service delivery approaches.

- Team composition and behavior was related to the number of providers involved and, perhaps, to the amount of interaction between them.

Finally, the identification of clear uniform patterns of service delivery within which children's service profiles could be categorized was not

possible given the variation in service patterns found and the low level of relationships.

Relationships Between Service Variables and Child and Family Demographics

In the absence of identifiable service models, the exploration of how service characteristics were related to child and family characteristics continued focusing on each aspect of service delivery separately.

The first analyses were the relationships between service variables and demographics so that their possible role as intervening variables for relationships between service delivery and child development, and service delivery and family status change could be explored. So many relationships between service characteristics and demographics were found, however, that they must first be treated as an important aspect of a full description of service profiles.

Four variables were selected which pertained to all the children and their families, and were, at least, conceptually independent of each other. These were sex of child, family composition (one or two parent family), family income, and family education. In addition, a composite socio-economic measure, the family's score on Hollingshead index, was also chosen for future analysis. Two preliminary analyses were conducted: determining the relationships among these variables and determining the relationships between these variables and selected service variables including age when intervention services began, classroom demographics,

classroom environmental quality, classroom activity, IFSP outcomes, service prevalence, service intensity, service location, service modality, and team characteristics.

Not surprisingly, all the demographic variables, except sex of child were found to be interrelated; the correlational coefficients ranged from .53 to .80 (see Table 39). Given these interrelationships, the finding of many significant correlations between some of the service characteristics and several of the demographic variables was interpreted with caution; a multivariate approach was chosen instead.

Each of the service variables described above was defined as the dependent measure in a series of multiple regressions using a stepwise introduction of variables. The variables listed for potential entry into the system were the five demographic variables.

Relationships Involving Sex of the Child

Very few of the service delivery variables differed for boys and girls. The ones with a significant beta coefficient for sex in the multiple regression were number of staff in class (girls were in bigger classes), amount of free play in the classroom (boys experienced more), number of IFSP outcomes unrelated to child or family and the number of outcomes in the self help domain (more identified for boys), prevalence of receiving audiological services (girls were more likely), and social work services (boys were more likely), and the proportion of services provided directly and through consulting (boys had a higher proportion delivered directly). (All

significant relationships involving sex of child are listed in the first columns of Tables 40 - 45).

Relationships Between Social Economic Status Variables and Classroom Characteristics

Each of the individual social economic status variables, number of parents in the household, family income, and education level of the child's primary caretaker (mother or mother surrogate if present, else father) was related to several of the classroom variables. Children with only one parent were more likely to be in classes with a greater number of other children with disabilities, and with classroom staff with less experience with a birth to three population; they also were in classrooms that spent more time eating. Educational level of the child's primary caregiver was the factor most frequently related to classroom characteristics. Children with a more highly educated parent or caregiver spent more time in class; were in classrooms with higher environmental quality ratings; spent more class time in circle, goal directed activities, and adult care, and less in free play; and had teachers who spent more time in direct intervention activities. With caregiver education covaried, higher family incomes were associated with more circle time and lower environmental quality indices. With both of the individual factors already in the equations, the composite Hollingshead measure did not add any predictive power. (Relationships of the demographic variables with classroom characteristics are given in Tables 40 and 41.)

Relationships Between Social Economic Status Variables and Identified IFSP Outcomes

Family income was a stronger factor in relationships with IFSP outcomes. Children from families with higher incomes had more outcomes identified overall and were more likely to have motor related outcomes defined. They were less likely, however to have defined outcomes related to behavior. Children with one parent were more likely to have outcomes identified within the play related and cognitive domains. Children with more highly educated caregivers were less likely to have integrated outcomes defined. Higher Hollingshead scores were associated with more cognitive and more vision related outcomes and with more identified outcomes not clearly related to child or family. (Table 42 lists the significant relationships between demographics and defined IFSP outcomes.)

Relationships Between Social Economic Status Variables and Service Prevalence

Family income was again the dominant social economic status factor in relationships with service prevalence. Children from families with lower incomes were more likely to receive speech services, audiology, family counseling, and transportation services but less likely to receive physical therapy, occupational therapy, medical evaluation, and vision services. Children with more educated caregivers were more likely to receive speech services, health related services, service coordination, and assistive technology. Children of two parent families were more likely to receive

medical evaluation and assistive technology but less likely to receive transportation services. With caregiver education covaried, higher scores on the Hollingshead measure of education and income were associated with a lower likelihood of receiving health services, vision services, and assistive technology. (The significant relationships are listed in Table 43.)

Relationships Between Social Economic Status Variables and Other Service Characteristics

None of the demographic variables were related to the total number of hours of services received. Higher family income was related to a lower proportion of services received at the center. Children in one parent families were more likely to receive their services outside of a group setting. Higher scores on the Hollingshead measure were associated with a higher proportion of services received directly. There were no significant relationships found between the demographic variables and any of the service specific intensity, location, or modality indicators. (The significant relationships involving other service characteristics are listed in Table 44.)

Relationships Between Social Economic Status Variables and Service Team Characteristics

More frequent team meetings were associated with higher caregiver education levels; team meeting attendance was reported higher for teams for children with one parent; children from families with higher income

were more likely to have larger teams. The team makeup was also associated with several of the variables: higher scores on the Hollingshead measure were associated with a higher proportion of team members providing services. Children with more highly educated caregivers were more likely to have their specialized instructor and a parent on their team. Among children of families with similar educational levels, however, those with higher scores on the Hollingshead composite measure were less likely to have the related specialized instructor on the team. (Demographic and team relationships are listed in Table 45.)

Relationships Between Social Economic Status Variables And Onset Of Intervention Services

There was a moderately strong inverse relationship between the children's age when early intervention services began and the families' income (refer back to Table 40).

Summary and Conclusions About Service - Demographic Relationships

One or more measures of socio-economic status were related to many of the service variables. As might be expected, higher status was related on several measures with what could be labeled as "better": services began earlier, were in higher quality rated classes, more time was offered to the children in the class, classroom staff had more experience, and parents were more likely to be included in the service team meetings.

Several other significant relationships did not fit this pattern, however. Children from families with higher socio-economic status did not receive a clearly "better" alternative. They were in classrooms with fewer other children with disabilities and staff that presented more structured activities and provided more direct intervention. Planned services were less integrated and less family oriented. They received a greater proportion of their services away from the center and provided directly by a specialist in the discipline rather than through consultation.

Relationships Between Service Characteristics and Child and Family Status and Change

Overview and Methodology

With the preliminary checks and the service profile description tasks completed, the major exploratory goals of the study could be undertaken: a better understanding of how service delivery affects child and family outcomes. However, before this exploration could be conducted, several methodological decisions had to be made.

Statistical Approach

The study was unable to recruit children that fit into predetermined categories of service delivery and no clearly identifiable categories or models of service delivery emerged from the analyses. Thus, a group analysis approach of the effects of service delivery was inappropriate.

Instead, a partial correlation approach was chosen to explore the relationships between service characteristic variables and child and family status and change variables. This approach was selected for several reasons. There were a large number of potential service characteristics variables and a large number of outcome measures to be explored. Partial correlations were an efficient way to review the many relationships resulting from the combining of the two large pools of variables. Partial correlations allowed each relationship to be explored individually while controlling for the effects of other variables, such as demographics or severity of disability. The stepwise multiple regression technique used for the exploration of the demographic variables was not considered as appropriate here because of the large number of variables involved and more importantly, because the relationships among most of the service characteristics were not as strong. When there was reason to believe that other service characteristics might be intervening or suppressing a studied relationship, the partial correlation approach allowed for those variables to be added as covariates.

As has been the case throughout this study, the non uniformity of the sample by age necessitated another methodological decision. Consistent with the analysis of change earlier, status and change was explored for the 30 month to 36 month period for the entire sample. The early participant subsample was used for the analysis of status and change from 24 months to 30 months. In addition, data for the 31 children and families was used in a third analysis focusing on the full year of change from 24 months to 36 months.

Choosing Characteristics And Outcomes For Further Study

The last task before running the analyses was choosing the variables for the analyses, including the service characteristics, the outcome measures, and the covariates. For the service characteristics, the goal was the identification of a smaller group of variables that would cover the scope of service characteristics and avoid redundancy. Variables were chosen from classroom demographics, classroom quality, classroom activity, and service prevalence, intensity, location and modality. They included:

- number of children with disabilities in the class
- mean classroom staff experience
- ITERS total score
- amount of free play in class
- how much of an intervention role the teacher took in class
- age at which child began intervention services
- intensity of specialized instruction
- intensity of all other services
- proportion of services (not including special instruction) received at center
- proportion of services (not including special instruction) received in group
- proportion of services (not including special instruction) received as consultation

In addition, several variables were chosen for special analyses involving the two most prevalent services: motor and speech. These variables were:

- intensity of physical therapy services
- proportion of physical therapy services received at center
- proportion of physical therapy services received in group
- proportion of physical therapy services received as consultation
- intensity of occupational therapy services
- proportion of occupational therapy services received at center
- proportion of occupational therapy services received in group
- proportion of occupational therapy services received as consultation
- intensity of speech and language services
- proportion of speech and language services received at center
- proportion of speech and language services received in group
- proportion of speech and language services received as consultation

For the dependent measures, the choices were directed by the analyses of change for the child and family measures. The developmental scales and subscales all showed clear change across the ages and were all included. Other variables chosen for the analyses were the social status variables and family support scale total, each of which showed some tendency toward change with age in the earlier analyses.

The analyses of the developmental scales included the age equivalence scores at 36 months (30 months for the one set of analyses on the subsample) and the proportional change indices for each of the three age

spans to be studied. The emphasis for these analyses was change so additional variables were created and included in the analyses. The residual change score approach described by Cronbach and Furby (1970) and advocated in a study of infants with disabilities by Shonkoff, Hauser-Cram, Krauss, and Upshur (1992) was followed. In this approach the developmental scores at a later age are regressed on the corresponding scores for the earlier age, thereby creating an "expected" score, for the older age point. The differences between the expected score and the actual score at the older age is termed "the residual score". The residual scores are then standardized to a mean of zero and a standard deviation of one for easier comparison across measures. The standardized residual for each scale thus represents a measure of the amount of change for each individual over that period of time relative to the larger group. Shonkoff et al. (1992) argue that this method of change analysis is resistant to the influence of initial scores, a problem they argue exists with simple differences or indices of change scores. Standardized residuals for the entire sample for ages 30 to 36 months, and for the subsample for ages 24 to 30 and 24 to 36 months were calculated.

The prevalence of relationships between demographic characteristics of the children and their families and various aspects of their service delivery suggested the inclusion of demographic variables as covariates. In addition, because some aspects of service delivery, especially service prevalence and intensity, were highly correlated with severity of disability, a measure of severity (Batelle total for the general analyses, Peabody or PLS total for the motor and speech special analyses) was

included in the analyses of the developmental age equivalence scores at 36 months and 30 months. The severity covariate was not included for the proportional change index and standardized residuals since they involved relative not absolute development levels.

One additional transformation was performed on the service characteristic variables to further address the problem inherent in interpreting relationships between services provided and developmental levels. The purpose of these analyses was to study the effects of service delivery on developmental change. It was obvious, however, that a child's developmental capabilities very clearly helped determine the profile of services he or she was provided. To mitigate against the "reverse" explanation, status and change measures were correlated only with averages of prior rather than current service. Thus, for the entire sample, status variables at 36 months, and the proportional change index and standardized residuals for the 30 through 36 month period were correlated with service averages for the 30 and 33 month points. The subsample analyses combined 24 and 27 month averages with 30 month scores and 24 through 30 month change measures and 24, 27, 30, and 33 months averages with the 36 month scores and the 24 through 36 month change measures.

Results of the Correlational Analysis

Despite the considerable reduction in the number of variables chosen for the analyses, the outline above produced approximately 700 partial correlations for each age analyses. A preliminary review of the results

suggested several additional covariates including more specific measures of severity of disability for motor and speech and covarying intensity of service for the exploration of the location and modality characteristics. These additional covariates and the replication of the analysis for the entire sample and the subsample at the two age spans produced a total over 3300 correlations. This volume presented both practical and methodological difficulties. First, the presentation of the complete results was unwieldy. To summarize the results, Tables ??? present all the significant correlations listing the service characteristic, outcome domain and specific measure, covariates used in addition to the demographic variables, the relevant sample/age span, and the correlation itself. The following sections will discuss all of the significant correlations area by area but do so without repeating the detail in the table.

A more serious problem was that the volume of correlations increased the possibility of spurious correlations. To interpret the results more meaningfully a decision was made to make use of the remaining redundancy in the data set, specifically the three versions of each analysis (the entire sample and the subsample at the two age spans) and the replication of measures (e.g., the age equivalencies, proportional change indices, and the standardized residuals or several measures of social status). Relationships that were replicated across the age/sample analyses and across different measures were considered most reliable; individual or scattered significant correlations were considered questionable.

Service Characteristics and Perceived Family Support

Among the outcome measures studied, only one directly pertained to families, the family support scale total. The relationship of this variable with each of the aspects of service delivery was therefore reviewed separately. Increases in family support were related to higher quality ratings and a more active interventionist role of the adult in the classroom for the subsample during the 24 month to 30 month period. Fewer hours of specialized instruction for the child and a higher proportion of other services delivered in a consultative mode were found to be related to greater support. The former was applicable only to the subsample but the latter was found in both the full sample and the subsample. All of these were found when a measure of severity of disability was covaried along with the demographic measures. (Table 46 summarizes the variable, covariate, and sample information for the significant partial correlations involving perceived family support.)

Age When Early Intervention Service Began

Because children with more severe disabilities were more likely to be referred to early intervention at an earlier age, covarying a measure of severity of disability in addition to the demographic variables for all the status variables was crucial to the understanding of the results (severity levels were already a part of the proportional change index and standardized residuals). With language developmental level controlled, children who began intervention at an older age had higher language levels at 36 months and greater language development relative to the

other children in the full sample. Data in each of the analyses suggested that later entry into early intervention was related to higher motor performance later and possibly (one relationship) a quickening of the rate of motor development when general developmental level was controlled. However, these results were not replicated when a measure of motor specific initial developmental level was controlled in place of general developmental level.

One significant correlation suggested that earlier entry into the system was beneficial to social development at age three (as measured by the Batelle personal social domain). (Table 47 summarizes the variable, covariate, and sample information for the significant partial correlations involving age when early intervention began.)

Classroom Characteristics

Number of Children with Disabilities. Several significant partial correlation results suggested that a relationship existed between a child's language development and the number of other children with disabilities in the class. Understanding the nature of the relationship was very difficult, however. The two subscales of the PLS appeared to give contrasting information; several change measures involving the receptive scales showed a negative effect of more children but the expressive scale change indices were positively related to more children. The communication domain on the Batelle also had conflicting results, this time between the full sample and the subsample analyses. Given this confusing pattern of results, no conclusions were reached.

Quality of Environment. The was greater consistency of results for relationships involving the ITERS scale. The auditory subscale on the PLS and both the fine motor subscale and total motor score of the Peabody Motor Scale showed a inverse relationship with the quality scale. The results for motor development were found for both the full sample and the subsample, and were found when initial developmental level was covaried.

Teacher Experience. Language development again showed different results for the full sample and subsample in its relationships with the average amount of experience among the classroom providers -- a positive relationship between the factors in the subsample but an inverse relationship for the full sample. Motor development was shown to be more clearly related to teacher experience. Consistently, across both samples and for 36 month levels and residual change scores, there was an inverse relationship between motor development and teacher experience. A relationship was also suggested between teacher experience and one of the social status variables (whether other children "watch out" for the child); there was greater involvement of the children when the teachers were more experienced.

Level of Adult Intervention. There were several significant relationships between various developmental measures and the proportion of classroom time the teacher was actively intervening with the child. The full sample analysis showed increased development and developmental change on the cognitive and adaptive scales of the Batelle and on one

change measure for motor development. Two significant relationships involving the subsample, however, suggested an inverse relationship with motor development. Again, the inconsistency between the samples and the measures made conclusions difficult.

Free Play. The proportion of time in the classroom spent in free play showed an inverse relationship with several developmental measures. The measure that showed consistency across the samples was the proportional change index for the adaptive subscale of the Batelle with both the full sample from 30 to 36 months and the subsample from 24 to 36 months indicating that less free play was related to a greater increase in developmental rate. (Table 48 summarizes the variable, covariate, and sample information for the significant partial correlations involving all of the classroom characteristics.)

Intensity of Service

Number of Services Other than Specialized Instruction. Relationships found in all three analyses suggested that language levels were lower for children who received more services even when initial development level was covaried but that the relative amount of change (as measured by the proportional change index) in the study period compared to previous ages for the language levels was greater. For the children in the subsample, receiving a greater number of services was related to greater social status and development independent of initial developmental levels.

Intensity of Specialized Instruction. Significant relationships were found between the number of hours of specialized instruction and measures for several developmental domains. All but one were found only in the subsample analyses and all except the same one showed a positive effect of greater intensity. The developmental domains included language, motor, and cognitive. Findings for all three domains were consistent across measures, including absolute scores (with developmental levels controlled), proportional change indices, and standardized residuals. The one exception, found in the whole sample analysis, suggested that more specialized instruction was related to lower status in class. This finding was clearly isolated as no other social measure showed a similar effect.

Intensity of Services Other than Specialized Instruction. A greater amount of all other services received was related to lower levels of language development at 30 and 36 months but greater proportional change. These results were consistent across all three age analyses and present with either a general or language specific covariate for initial developmental level. That the intensity of a combination of services was related only to language might have been predicted based on language being the most prevalent other service. Another analysis, however, which explored specifically how the amount of speech therapy related to several measures showed no relationship with the language measures. Rather, only the proportional change index for the Batelle measure of personal social development showed a relationship. Neither the intensity of physical nor occupational therapy were greatly related to motoric development, as might be expected. (Table 49 summarizes the variable,

covariate, and sample information for the significant partial correlations involving each of the intensity of service measures.)

Location of Services

To avoid redundancy, only the proportion of services at the center were correlated with the status and change measures, so any differences between home and office locations were not explored. The proportion of all services and the proportions of the three most prevalent therapies, physical, occupational, and speech were each explored. The two most obvious conclusions from a quick review of the results were that there were clear effects of location of service and that the effects were positive: a higher proportion of services at the center was related to higher levels of motor development and social status. A higher proportion of motor therapy at the center was related to greater motor development and change but the location of speech therapy showed only one effect -- the proportional change index for Batelle personal social development. There was clear consistency across various measures (item and subscale scores, proportional change indices, and standardized residuals) and covarying general and specific measures of prior development. The effects were stable also when the intensity of service was covaried suggesting that location was acting independently of intensity. Some relationships were found in all three analyses, but specific relationships were not replicated across samples. Relationships involving all therapy, physical therapy, and speech therapy were all found only in the subsample; the relationships with location of occupational therapy were found in the full sample. (Table 50 summarizes the variable, covariate, and sample

information for the significant partial correlations involving location of service provision.)

Modality of Services -- In and Out of Group

Again, only one set of relationships was calculated but, unlike location, the information was complete because only two possibilities existed. The data were similar to those for location. There were many significant relationships between the proportion of services in group and motor and social development but not language or the other developmental domains. The relationships were consistent for status and change measures and did not change with additional covariates. The relationships involving the proportion of occupational therapy in group were replicated across all three age analyses but the others were found for the subsample only. The magnitude of the relationships found for the proportion of physical therapy (varying from .62 to .87) were worthy of special note, suggesting that factor can explain 40% to 75% of the variance in the developmental measures. (Table 51 summarizes the variable, covariate, and sample information for the significant partial correlations involving services received in group.

Modality of Service -- Direct and Consulting

The analysis for the other modality -- direct and consulting -- produced similar findings. Again, since it was a dichotomous variable, one set of correlations was sufficient for complete information. A higher proportion of services provided through a consulting arrangement was related to

higher development levels for motor and social development. This aspect of service was also positively related to language development (primarily expressive language). As with the previous two analyses, the relationships found were consistently found for status measures, proportional change indices, and standardized residuals, and with general and specific prior developmental levels and intensity controlled. Although the relationships were most prevalent for the subsample analyses, the pattern of results was also evident in the whole sample analysis. The proportions of the motor therapies and speech therapy provided through consultation showed a similar pattern of results (but with somewhat less support in the whole sample analysis) with motor and language development respectively. A minor reversal from expectations was that the modality of physical therapy had a stronger relationship with fine motor development while the modality of occupational therapy was related to fine and gross motor development. (Table 52 summarizes the variable, covariate, and sample information for the significant partial correlations involving services received through consultation.

Summary of Service - Development Relationships

Despite the large volume of data and significant relationships, a summary of the findings can be stated briefly.

Among the many service characteristics, service location and modality demonstrated the most consistent patterns of relationships with child development. Larger proportions of service

provided at the early intervention center, in a group environment (themselves highly correlated), and using a consulting model were related to higher scores and greater developmental change, as measured by proportional change indices and standardized residuals, on motor, language, and social development.

These relationships of service location and modality with child development were independent of the severity of the disability of the child and the intensity of the services received.

Motor and language development were more frequently related to service characteristics than the domains of cognitive, adaptive or personal social development. (There was more opportunity among the three developmental scales for motor and language correlations but the results suggested a finding beyond the artifact).

The social status questionnaire measures, which reflected the teachers reports of social behavior in the classroom, were more frequently related to location and modality of other services than to more direct classroom characteristics.

Physical and occupational therapy were more closely related to motor developmental measures than speech and language services were to measures of language development.

Some of the measures of classroom quality, such as teacher experience and environmental quality scales, surprisingly showed more inverse than positive relationships with development.

Some of the service characteristics explored showed significant relationships primarily in the analyses of ages 24 - 36 for the subsample. These included the staff's level of direct intervention in the classroom, the intensity of specialized instruction, and some of the relationships for the proportion of services provided at the center and in group. That these findings were not replicated in the full sample was troubling, either suggesting that there were some systematic differences between the samples or decreasing the estimate of the reliability of the findings. Earlier analyses that explored possible differences between the subsample and the remaining children in the whole sample on demographics, initial severity of disability, and service profile found few differences and thus offered no support for an explanation based on differences in the sample. Strengthening the credibility of the findings, however, was that most of them were part of larger patterns of relationships. In the absence of a methodology designed to test these questions, it was not possible to reach more definitive conclusions.

Overall Summary and Conclusions

A longitudinal study of 70 children was designed to study the effects of different service delivery structures on the status and development of children with disabilities and their families. Several logistical and

methodological difficulties resulted in many design and analysis changes. Despite the changes, the study still primarily served as a descriptive vehicle for service delivery characteristics and their relationships to child and family status and change.

The results can be summarized as follows:

- Children showed clear developmental gains on all measures between the study ages of 24 and 36 months. There was at least the suggestion of accelerated development for the 30 to 36 month period.

- All children received specialized instruction for an average of 6.5 hours per week. Speech, physical, and occupational therapies were common; other of the mandated services were provided to one quarter of the children or fewer. The average intensities of most of the services other than specialized instruction were low (less than one hour per week).

- Although there were clear differences across individual services, most service was provided at the early intervention center, in group and direct.

- Many of the services were provided for the entire year of the study but audiology, nutrition, medical and health services, family counseling and vision services were commonly added or dropped from one observation point to the next (three month span).

- All children had identified service teams with their specialized instructor, service coordinator, and about two thirds of their service providers generally on the team. Parents were seldom listed as team members.

- There were few strong relationships found between service characteristics; no clear models of service provision were identified.

- The factors of location of service and provision in and out of group were related within individual services. Both were related to intensity of the service.

- Demographic variables, particularly those indicating socio-economic status of the families, were frequently related to service provision characteristics.

- Despite sometimes conflicting results across different measures and different samples, service location and modality showed the most consistent patterns of relationships with child and family status and change. Service delivery at the early intervention center, services delivered in group settings, and services delivered through a consulting relationship were associated with greater motor and social development and, for some characteristics, with greater language development. These associations were found to be independent of demographic variables, severity of disability, and intensity of services.

IX. PROJECT IMPACT

A project informational brochure was produced and was distributed to families, early intervention staff, and other key personnel throughout the state and nationally. The procedural handbook was revised to reflect the study's current focus and objectives, as was the data collection handbook. In addition, the following article was published in Topics in Early Childhood Special Education.

Bruder, M. B., Staff, I., & McMurrer-Kaminer, E. (1997). Toddlers receiving early intervention in childcare centers: A description of a service delivery system. Topics in Early Childhood Special Education, 17(2), 185-208.

X. FUTURE ACTIVITIES

None planned.

XI. ASSURANCE STATEMENT

This final report has been sent to ERIC and other agencies.

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Table 1

Profile of Participants in the Study
Child and Family Demographic Information (N = 70)

	Number of Children	Percent
Sex		
Female	32	45.7
Male	38	54.3
Race		
African American	9	12.9
Asian	1	1.4
Caucasian	46	65.7
Latino	11	15.7
Mixed race	3	4.3
Living With		
Parents	36	51.4
Just mother	24	34.3
Just father	2	2.9
Grandparents	5	7.1
Adoptive parents	1	1.4
Foster parents	2	2.9
Custodial parents unemployed		
yes	21	30.0
no	49	70.0
Family income		
Public assistance only	18	25.7
Public assistance supplementing income	7	10.0
Under $20,000	6	8.6
$20,000 - $40,000	11	15.7
$40,000 - $60,000	17	24.3
Over $60,000	11	15.7

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Table 1 (continued)

Profile of Participants in the Study
Child and Family Demographic Information (N = 70)

	Number of Children	Percent
Education of mother or mother surrogate (for 68 children with mothers)[1]		
Not high school	11	16.2
High school	27	39.7
Some college	15	22.1
College	11	16.2
Post grad	4	5.9
Education of father or father surrogate (for 43 children with fathers)[1]		
Not high school	7	16.3
High school	17	39.5
Some college	3	7.0
College	8	18.6
Post grad	8	18.6

[1] Surrogates include grandparents, adoptive or foster parents

Table 2

Profile of Participants in the Study
Referral Information (N = 70)

Reason for Referral	Number of Children	Percent
Developmental Delay	28	40.0
Motor impaired	5	7.1
Multihandicapped	11	15.7
Mental retardation	10	14.3
Speech impaired	8	11.4
Hearing impaired	1	1.4
Visually impaired	1	1.4
Health impaired	2	2.9
Autism/P.D.D	1	1.4
Other	3	4.3

	Mean	Standard Deviation	Minimum	Maximum
Age (months) early intervention started	12.37	8.02	0	28
Developmental level at intake(age equivalent on Battelle Scale as percent of chronological age	55.65%	20.34	3.33	84.00

Table 3

Profile of Participants in the Study
Service Providers

	Number (N= 367)	Percent
Position		
Specialized Instructor	44	12.0
Classroom Staff	144	39.2
Therapist	77	21.0
Medical Provider	34	9.3
Service Coordinator	37	10.1
Other Provider	31	8.4
Education (of 239 for whom information was available)		
MD	20	8.4
Master's	59	24.7
Bachelor's	71	29.7
Associate's	21	8.8
High School	67	28.0
No Degree	1	.4

	Mean	Standard Deviation	Minimum	Maximum
Years Experience with Birth toThree Population	7.22[1]	5.74	1	30

[1] Experience information available for 227 providers

Table 4

Profile of Participants in the Study
Early Intervention Programs

Program Name	# of Children in Project Served	# of Age Points
Ledgewood Private Preschool	2	8
Bright Horizons	3	7
Little People's Prep Nursery	2	5
Children's Village	1	5
Puddle Ducks	1	3
New Britain YMCA	1	3
Women's League	2	8
Best Beginnings	2	9
Trinity College Community Child Care	2	8
First Church Nursery School	1	3
Bright Horizons 2	2	3
Noah's Ark	1	2
Early Childhood Learning Center	5	17
Bridgeport YMCA	1	2
A Child's Garden	1	2
Busy Bodies	1	5
Hall Neighborhood House	1	1
The Children's Corner of Fairfield	2	3
Joanne's Day Care	1	2
Good Shepherd Day Care	1	3
Little People's Day School	4	7
Meriden YMCA	1	3
Long Wharf Children's Center	1	1
E.B. Jackson	1	3
Apple Tree Learning Center	2	8
Mill River Day Care	5	19
Children's Discovery Center 2	3	4
Oakwood Child Center	1	2
Little Rascals	1	2
Pooh Corner	5	14
Pooh Corner 2(Otrabondo Ave.)	7	26
Children's Discovery Center	6	20
United Methodist Nursery School	8	29
St. Mark's Toddler Play Group	6	21
Children's Corner	3	7

Table 5

Description of Instruments and Procedures
Instruments and Variables to be Measured

FAMILY STATUS INFORMATION	COLLECTED AT...
SES	Intake
Race	Intake
Cultural and Linguistic Background	Intake
Educational Level of Caregivers	Intake
Marital Status	Intake
Family Members Age and Sex	Intake
Employment Status of Caregivers	Intake
Primary Disabling Condition of Child	Intake
Child Intervention History	Intake
Family Needs Scale	24, 30, & 36 age pts.
Family Resources Scale	24, 30, & 36 age pts.
Family Support Scale	24, 30, & 36 age pts.
Personal Network Matrix	24, 30, & 36 age pts.
CHILD STATUS	
Batelle Developmental Inventory (Newborg, Stock, Wnek, Guidubaldi & Svinicki, 1984)	24, 27 30, 33, & 36 age pts.
Peabody Motor Scales (Folio & Fewell, 1983)	24, 27, 30, 33, & 36 age pts.
Preschool Language Scale (Zimmerman, Steiner & Pond, 1979)	24, 27, 30, 33, & 36 age pts.

Table 5 (continued)

Description of Instruments and Procedures
Instruments and Variables to be Measured

Social Network Scale	24, 30, & 36 age pts.
Social Status Scale	24, 27, 30, 33, & 36 age pts.
SERVICE CHARACTERISTICS	
Individualized Family Service Plan	24, 27, 30, 33, & 36 age pts.
Infant and Toddler Environmental Rating Scale (Harms & Clifford, 1988)	24, 27, 30, & 33 age pts.
Early Childhood Environmental Rating Scale (Harms & Clifford, 1980)	36 age pt.
Classroom Demographics	24, 27, 30, 33, & 36 age pts.
Prevalence, Intensity, Location, and Modality of Services	24, 27, 30, 33, & 36 age pts.
Provider Education and Experience	once for each provider
IFSP Content Analysis	24, 27, 30, 33, & 36 age pts.
Daily Activities Observation	24, 27, 30, 33, & 36 age pts.

Table 6

Reliability

	Reliability Sample Percent of Data	Percent Agreement		Interrater Correlation
		Mean	Range	
Battelle	22	96	79-100	
Peabody Motor	24	98	87-100	
PLS-3	24	99	78-100	
All Developmentals	23	97	78-100	
Activity Log	27	98	78-100	
ECERS	15	90	65-100	
ITERS	23	95	73-100	
Environmental	21	94	65-100	
SES (Hollingshead)	100			.96

Table 7

Comparability of Children by Subsample
Demographic Profile

	24-30 months (n=31)		30-36 months only (n=39)	
	Number of Children	% of Children	Number of Children	% of Children
Sex				
Female	18	58.1	14	35.9
Male	13	41.9	24	64.1
Race				
African American	7	22.6	2	5.1
Asian			1	2.6
Caucasian	18	58.1	28	71.8
Latino	4	12.9	7	17.9
Mixed race	2	6.5	1	2.6
Living with				
Parents	14	45.2	22	56.4
Just mother	11	35.5	13	33.3
Just father	2	6.5		
Grandparents	1	3.2	4	10.3
Adoptive parents	1	3.2		
Foster parents	2	6.5		
Household Composition				
Two Parent	16	51.6	25	64.1
Single mother	13	41.9	14	35.9
Single father	2	6.5		
Family Income				
Public assistance only	5	16.1	13	33.3
Public assistance supplement	5	16.1	2	5.1
Under $20,000	4	12.9	2	5.1
$20,000 - $40,000	5	16.1	6	15.4
$40,000 - $60,000	6	19.4	11	28.2
Over $60,000	6	19.4	5	12.8
Custodial Parents unemployed				
Yes	8	25.8	13	33.3
No	23	74.2	26	66.7

Table 7 (continued)

Comparability of Children by Subsample
Demographic Profile

	24 -30 months		30 - 36 months	
	Number of Children	Percent	Number of Children	Percent
Education of mother or mother surrogate (for 68 children with mothers)[1]				
Not high school	4	13.8	7	17.9
High school	12	41.4	15	38.5
Some college	7	24.1	8	20.5
College	4	13.8	7	17.9
Post grad	2	6.9	2	5.1
Education of father or father surrogate (for 43 children with fathers)[1]				
Not high school	4	22.2	3	12.0
High school	6	33.3	11	44.0
Some college	1	5.6	2	8.0
College	4	22.2	4	16.0
Post grad	3	16.7	5	20.0
	Mean	S.D.	Mean	S.D.
Hollingshead Measure of SES[2]	35.24	16.31	34.91	17.72

Table 8

Comparability of Children By Subsample
Referral

Age at Referral	24 - 30 months (n= 31)		30 - 36 months (n= 39)	
	Mean	S.D.	Mean	S.D.
Months	10.58	7.24	13.79	8.42

	24 - 30 months (n= 31)		30 - 36 months (n= 39)	
	Number of Children	% of Children	Number of Children	% of Children
Primary diagnosis - parent report				
Developmental delay	14	45.2	14	35.9
Mental retardation	6	19.4	4	10.3
Speech impaired	1	3.2	7	17.9
Hearing impaired			1	2.6
Visually impaired	1	3.2		
Motor impaired	2	6.5	3	7.7
Multihandicapped	7	22.6	4	10.3
Health impaired			2	5.1
Autism/P.D.D.			1	2.6
Other			3	7.7

Table 9

Comparability of Children by Subsample
Developmental Age Equivalence Scores at Age 30 Months

	24 - 30 months (n=31)		30 - 36 months (n=39)	
Developmental Scale and Subscales	Mean	S.D.	Mean	S.D.
Batelle overall	16.52	6.27	17.00	5.56
adaptive	16.42	6.40	17.34	5.99
communication	14.52	6.07	14.92	5.73
cognitive	17.39	6.96	16.50	6.12
motor	17.03	7.84	16.97	6.77
personal-social	15.06	5.72	15.18	5.29
Peabody overall	16.37	7.24	16.68	5.70
fine motor	16.42	7.39	17.10	5.86
gross motor	16.32	7.38	16.25	5.94
PLS overall language	17.61	6.39	17.21	7.06
auditory language	16.77	7.12	16.66	7.03
expressive language	17.52	6.36	16.87	7.26

Table 10

Comparability of Families of Children By Subsample
Family Measures

Scale Totals	24 - 30 months (n= 31)		30 - 36 months (n= 39)	
	Mean	S.D.	Mean	S.D.
Family Support	2.45	.55	2.25	.60
Family Contacts	2.45	.47	2.32	.36
Family Needs	2.21	1.09	1.76	.86
Family Resources	3.82	.59	3.83	.71

Scales

Support	1 - 5	not all helpful to extremely helpful
Contact	1 - 5	no contact to contact almost every day
Needs	0 - 5	no problem to almost always a need
Resources	0 - 5	not at all adequate to almost always adequate

Table 11

Comparability of Children by Age By Subsample
Individualized Family Service Plan at 30 Months

	24 - 30 months (n=31)	30 - 36 months (n=39)
Outcome Related To	% of IFSPs with at least one such outcome	
Child	100.0	100.0
Family	23.3	7.7
Neither	0.0	2.6
Both	0.0	0.0
Domain	% of IFSPs with at least one outcome in this domain	
Motor	70.0	64.1
Speech	83.3	89.7
Play	30.0	41.0
Self Help	33.3	35.9
Behavior	0.0	10.3
Vision	3.3	10.3
Cognitive	36.7	30.8
Health	6.7	0.0
Integrated Areas	6.7	5.1
Other	3.3	2.6

Table 12

Comparability of Children By Subsample
Service Profile at Age 30 months

Classroom Characteristics	24 - 30 months (n= 31)		30 - 36 months (n= 39)	
	Mean	S.D.	Mean	S.D.
Number of All Children	8.90	3.38	8.97	2.95
Number of Children with Disabilities	2.03	.55	1.97	.79
Ratio of Specialized Instruction Staff : Children With Disabilities	1.98	.52	1.95	.80
Teacher Experience (years)	10.01	11.57	10.83	8.77
Percent of Time in Free Play	42.53	10.72	41.41	15.93
Quality of Environment (ITERS Score)	4.51	.91	4.65	.92

	Prevalence of Service Provision			
	24 - 30 months (n= 31)		30 - 36 months (n= 39)	
Service	# Children	% of Children	# Children	% of Children
Special Instruction	31	100.0	37	100.0
Speech	29	93.5	29	78.4
Physical Therapy	18	58.1	20	54.1
Occupational Therapy	20	64.5	18	48.6
Nursing	5	16.1	4	10.8
Audiology	1	3.2	2	5.4
Family Counsel	2	6.5	4	10.8
Health	2	6.5	8	21.6
Medical	1	3.2	8	21.6
Nutrition	1	3.2	5	13.5
Service Coordination	31	100.0	36	97.3
Social Work	6	19.4	2	5.4
Vision	6	19.4	7	18.9
Assistive Tech	2	6.5	4	10.8
Transportation	12	44.4	21	56.8

Table 12 (continued)

Comparability of Children By Subsample
Service Profile at Age 30 months

	Service Intensity: Hours per Week for Those Receiving			
	24 - 30 months (n=31)		30 - 36 months (n=39)	
Service	Mean	S.D.	Mean	S.D.
Specialized Instruction	6.10	1.05	6.03	1.18
Speech	.40	.30	.51	.44
Physical Therapy	.79	.65	.70	.58
Occupational Therapy	.75	.58	.55	.38
Nursing	3.12	6.64	.28	.18
Audiology	.08	-	.02	.00
Family Counsel	1.00	1.41	2.82	3.52
Nutrition	.03	-	.18	.19
Social Work	.11	.18	.12	.16
Vision	.21	.15	.09	.08
Assistive Tech.	.04	.05	.70	.94

	Percent of Service			
	24 - 30 months (n=31)		30 - 36 months (n=39)	
Service Location and Modality	Mean	S.D.	Mean	S.D.
In Center	.60	.40	.56	.42
At Home	.39	.41	.31	.40
At Office*	.01	.03	.13	.28
In Group	.57	.42	.60	.41
Out Group	.43	.42	.40	.41
Direct	.79	.35	.88	.29
Consultation	.21	.35	.12	.29

* $p. < .01$

Table 13

Identifying Measures of Change
Developmental Indices Age Equivalencies (in Months)

	Change From 24 - 30 Months (n=31)		Change From 30 - 36 Months (n=70)	
	24 months	30 months	30 months	36 months
	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
BDI Total	13.26 (5.41)	16.52 (6.27)	16.71 (5.85)	20.25 (6.87)
Personal-Social	11.48 (5.32)	15.06 (5.72)	15.04 (5.44)	18.56 (6.29)
Adaptive	13.45 (5.33)	16.42 (6.40)	16.90 (6.19)	20.97 (7.62)
Motor	13.19 (5.85)	17.03 (7.83)	16.85 (7.16)	21.07 (8.85)
Communication	11.58 (5.05)	14.52 (6.07)	14.72 (5.89)	18.26 (7.48)
Cognitive	14.03 (5.27)	17.39 (6.97)	16.81 (6.48)	21.26 (8.51)
Peabody Total	13.52 (5.86)	16.37 (7.24)	16.20 (6.67)	19.60 (7.80)
Fine Motor	13.37 (6.32)	16.42 (7.39)	16.38 (6.78)	20.10 (8.01)
Gross Motor	13.68 (5.70)	16.32 (7.38)	16.02 (6.90)	19.10 (8.03)
PLS Total	12.65 (4.81)	17.61 (6.39)	17.37 (7.14)	21.77 (9.41)
Auditory Language	11.97 (4.68)	16.77 (7.12)	16.70 (7.48)	21.60 (10.25)
Expressive Language	12.35 (6.03)	17.52 (6.36)	17.03 (7.12)	21.08 (9.26)

All paired t-tests significant at p. < .001 or less

Table 14

Identifying Measures of Change
Developmental Proportional Change Indices (PCI)[1]

	PCI Representing Change from 24 - 30 Months (n=31)		PCI Representing Change from 30 - 36 Months (n=70)	
	Mean	S.D.	Mean	S.D.
Battelle Developmental Index				
Total	1.22	1.00	1.28**	.71
Personal-Social	2.05*	2.47	1.48**	1.04
Adaptive	1.01	.82	1.84*	3.09
Motor	1.24	.91	1.44**	1.14
Communication	1.52	1.87	1.59*	2.24
Cognitive	1.09	1.05	1.56**	1.48
Peabody Motor Scale				
Total	.90	.48	1.49	1.88
Fine Motor	1.16	1.01	1.66*	2.40
Gross Motor	.76*	.62	1.30	1.85
Pre-School Language Scale				
Total	1.93**	1.47	1.44**	1.26
Auditory Language	1.84	1.34	1.68**	1.53
Expressive Language	5.19	13.34	1.37	1.47

* reject hypothesis that mean equal to one; p. < .05
** reject hypothesis that mean equal to one; p. < .01

[1] PCI is ratio of rate of change during selected period compared with prior rate of change. PCI is equal to one when there is no change in developmental rate; when PCI is greater than one, it is an indication of an increase in development.

Table 15

Identifying Measures of Change
Child's Social Status and Social Contacts

	Change From 24 - 30 Months (n=29)		Change From 30 - 36 Months (n=52)	
	24 months Mean (S.D.)	30 months Mean(S.D.)	30 months Mean(S.D.)	36 months Mean(S.D.)
Social status				
Sit near child during snack	.86	.72	.90	.96
	(.69)	(.65)	(.69)	(.69)
Play with child's toys	1.00	.86	.94	1.06
	(.54)	(.58)	(.50)	(.46)
Choose child as buddy	.69	.62	.65 *	.86*
	(.54)	(.56)	(.56)	(.59)
Watch out for child	.66	.66	.65	.79
	(.61)	(.72)	(.68)	(.67)
Sit near child during circle	.86	.86	.94	1.06
	(.64)	(.69)	(.67)	(.61)
Sit near child during activities	.86	.86	1.00	1.10
	(.52)	(.64)	(.59)	(.57)
Scale total	4.93	4.59	5.10	5.83
	(2.71)	(3.06)	(2.89)	(2.83)
Number of Social Contacts	Change from 24 - 30 Months (n=19)		Change from 30- 36 Months (n=38)	
	24 months Mean (S.D.)	30 months Mean(S.D.)	30 months Mean(S.D.)	36 months Mean(S.D.)
All ages	2.42	2.32	2.42	2.55
	(2.14)	(1.89)	(2.08)	(2.17)
Peers (0-5 years)	1.58	1.11	1.39	1.47
	(2.34)	(1.85)	(1.70)	(1.77)

Social Status Scale includes six items; a scale mean was also calculated; scores were based on a three point scale: 0=never; 1=sometimes, 2=always

paired t-test * p. < .05

Table 16

Identifying Measures of Change
Family Measures

	Change 24 - 30 Months (n= 31)		Change 30 - 36 Months (n= 70)	
	24 months	30 months	30 months	36 months
Measure	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)	Mean (S.D.)
Family Support	2.45	2.41	2.42 *	2.61 *
	(.62)	(.56)	(.57)	(.56)
Family Contacts	2.43	2.43	2.36	2.45
	(.41)	(.48)	(.42)	(.48)
Family Needs	2.23	2.25	2.00	2.03
	(1.13)	(1.13)	(.97)	(1.07)
Family Resources	3.92	3.91	3.85	3.91
	(.55)	(.53)	(.55)	(.59)

*paired $t_{41} = 2.65$; $p = .011$

Table 17

Service Profile Description All Ages
Classroom Demographics

Measure	Mean	Standard Deviation
Number of children with disabilities	2.04	.74
Number of all children	9.08	3.02
Class time per week (hours)	6.50	2.42
Number of staff	3.36	.78
Mean years of staff experience	11.90	9.60

N = 265 for all but experience (N = 257)

Table 18

Service Profile Description Ages 24 - 33
Classroom Environment Quality (ITERS)[1]

Subscale	Mean	Standard Deviation
Furnishings and display	4.22	1.02
Personal care routines	4.52	1.24
Listening and talking	4.85	1.46
Learning activities	4.00	1.03
Interaction	4.81	1.24
Program structure	5.05	1.29
Adult needs	5.09	1.33
Overall rating	4.53	.95

N= 198

[1] All scores are means of relevant items (35 items total). The scale range is 1 - 7 (inadequate through excellent).

Table 19

Service Profile Description Age 36
Classroom Environment Quality (ECERS)[1]

Subscale	Mean	Standard Deviation
Personal care routines	4.40	1.29
Furnishings and display	4.24	.92
Language reasoning	4.43	1 23
Fine and gross motor	4.81	.79
Creative activities	4.08	.86
Social development	4.18	.89
Adult needs	5.01	1.49
Overall rating	4.43	.80

N = 60

[1] Mean of 37 items; scale range 1=inadequate through 7=excellent

Table 20

Service Profile Description
Planned Services - IFSP's

Outcome Related To	% of IFSPs with at least one such outcome	mean number of such outcomes per child
Child	100.0	3.64
Family	13.2	.15
Neither	1.9	.03
Both	0.0	.00
Domain	**% of IFSPs with at least one outcome in this domain**	**mean number of outcomes per child in this domain**
Motor	63.0	1.12
Speech	87.2	.99
Play	41.1	.49
Self Help	35.8	.45
Behavior	4.5	.04
Vision	6.4	.06
Cognitive	31.7	.39
Health	4.2	.04
Integrated Areas	9.8	.10
Other	3.8	.04

Table 21

Service Profile Description All Ages
Service Prevalence

Service	% of Observed Age Points Where Service Was Provided	% of Children Who Received Service at One or More Age Points
Special Instruction	99.6	100.0
Speech	85.1	85.7
Physical Therapy	57.3	62.9
Occupational Therapy	55.3	62.9
Nursing	13.7	17.1
Audiology	3.1	5.7
Family Counsel	8.4	14.3
Health	12.6	20.0
Medical	14.5	24.3
Nutrition	7.3	11.4
Service Coordination	97.3	100.0
Social Work	9.9	14.3
Vision	16.8	22.9
Assistive Tech	8.8	11.4
Transportation	50.6	54.7

Table 22

Service Profile Description - All Ages Past Intake
Service Continuity

Service	Children Currently Receiving Service		
	N	Percent Continued from Prior Age Point	Percent Newly Receiving Service
Special Instruction	191	99.0	1.0
Speech	167	96.4	3.6
Physical Therapy	108	97.2	2.8
Occupational Therapy	109	90.8	9.2
Nursing	27	88.9	11.1
Audiology	5	80.0	20.0
Family counsel	15	80.0	20.0
Health	22	86.4	13.6
Medical	28	75.0	25.0
Nutrition	13	84.6	15.4
Service Coordination	187	98.4	1.6
Social work	22	72.7	27.3
Vision	33	78.8	21.2
Assistive Tech	17	82.4	17.6
Transportation	93	95.7	4.3

Table 22 (continued)

Service Profile Description - All Ages Past Intake
Service Continuity

	Children Who Received Service at Prior Observation		
Service	N	Age Point Percent Continued	Percent No Longer Receiving
Special Instruction	191	99.0	1.0
Speech	163	99.0	1.0
Physical Therapy	116	90.5	9.5
Occupational Therapy	106	93.4	6.6
Nursing	28	85.7	14.3
Audiology	6	67.0	33.0
Family counsel	16	75.0	25.0
Health	27	70.4	29.6
Medical	24	87.5	12.5
Nutrition	15	73.0	27.0
Service Coordination	187	98.4	1.6
Social work	21	76.2	23.8
Vision	31	84.0	16.0
Assistive Tech	16	87.5	12.5
Transportation	90	98.9	1.1

Table 23

Service Profile Description - All Ages
Service Intensity Hourly Services

Service	Hours of Services Per Week For Those Receiving Services	
	Mean	Standard Deviation
Specialized Instruction	6.09	1.72
Speech	.46	.38
Phyiscal Therapy	.70	.78
Occupational Therapy	.60	.43
Nursing	2.24	5.20
Audiology	.16	.19
Family Counseling	1.94	2.58
Nutrition	.11	.12
Social Work	.14	.22
Vision	.12	.10
Assistive Tech	.50	.67
Total	7.75	3.32
Total (Other than Specialized Instruction)	1.69	2.74

Table 23 (continued)

Service Profile Description - All Ages
Service Intensity (For Services Usually Provided On Other Than Hourly Schedule)

Schedule	Percent of Those Receiving Service		
	Health (n=33)	Medical (n = 37)	Service Coordination (n=236)
Once Only	0.0	5.4	0.0
As Needed Only	24.2	18.9	7.2
Once Per Year	9.1	21.6	.8
Twice Per Year	24.2	40.5	65.7
3, 4, Or 6 Times Per Year	27.3	0.0	5.1
Once A Month	0.0	0.0	8.5
> Once Per Month	0.0	0.0	.4
< 1 Hour Per Month	15.2	13.5	5.9
< 1 Hour Per Week	0.0	0.0	5.9
One Hour Per Week	0.0	0.0	.4

Service	Mean Number of Trips per Week	Standard Deviation
Transportation (N=125)	3.50	1.07

Table 24

Service Profile Description - All Ages
Service Location

Service	Percent of All Children Receiving Each Service Who Receive in this Location				
	Center Only	Home Only	Office Only	Center and Home	Center and Office
Specialized Instruction	52.5	0.8		46.7	
Speech	74.4	16.1	1.8	7.2	0.4
Physical Therapy	51.3	33.3	4.7	10.7	
Occupational Therapy	40.0	44.1	2.8	13.1	
Nursing	16.7	50.0	11.1	22.2	
Audiology		37.5	37.5	25.0	
Family Counseling	40.9	27.3	31.8		
Health			100.0		
Medical Evaluation			100.0		
Nutrition		26.3	73.7		
Service Coordination	2.4	96.5	1.2		
Social Work	38.5	57.7	3.8		
Vision	45.5	15.9	38.6		
Assistive Technology	26.1	34.8		39.1	

Table 25

Service Profile Description
Number of Service Providers for Those Receiving

Service	Service Provisions by One Provider for Service		Service Provisions with Two Providers for Service	
	N	%	N	%
Specialized Instruction	252	96.6	9	3.4
Speech	216	99.5	1	0.4
PT	143	95.3	4	2.7
OT	134	92.4	7	4.8
Nursing	26	100.0		
Audiology	4	100.0		
Family Counsel	13	100.0		
Nutrition	12	100.0		
Social Work	23	100.0		
Vision	34	100.0		
Assistive Tech.	18	81.8	4	18.2

Table 26

Service Profile Description - All Ages
Team Characteristics

Basic Information	
Average Team Size	4.53 (S.D. = 1.47)
Does everyone on team attend?	73.8% responded 'Yes'

How Often Team Meets	
Weekly	25 (10.1%)
Twice a month	52 (21.0%)
Monthly	152 (61.3%)
Quarterly	14 (5.6%)
Twice a year	5 (2.0%)

Team Membership	Percent of Teams With Each Discipline or Role Represented By One or More Members
Specialized Instruction	100.0 %
Speech	82.7 %
PT	76.2 %
OT	64.1 %
Nursing	0.0 %
Parent	2.4 %
Early Childhood Teacher	12.0 %
Service Coordinator	51.2 %
Medical Provider	0.0 %
Team Leader	2.4 %

Team Membership and Service Provision	Mean % and (S.D.)
% of Team Members Who Are Providers	71.09 (27.86)
% of Child's Providers on Team	66.07 (25.21)

Table 27

How Service Characteristics Relate to Each Other
Classroom Demographics with Activities

	Percent of Time In Each Activity or Role						
	Goal Directed	Freeplay	Circle	Eating	Adult Care	Transitn	Direct Intrvent
Number of Children	.0345	.0883	.0884	-.0043	**-.1387***	.0712	.0372
Number of Children with Disabilities	-.0508	**-.1224***	.0808	.0561	-.0424	**.1801****	.0573
Number of Staff	.0461	-.0226	.0060	.0107	-.1031	.0329	.0724
Ratio of Staff: Children	.0009	-.0899	.0713	-.0158	-.0770	.1062	.0040
Ratio of Spec Instruct Staff: Children with Disabilities	-.0419	**-.1229***	.0494	.0541	-.0449	**.2002****	.0705
Hours Per Week in Class	.0387	-.0095	.0368	.0191	-.0065	-.0925	-.0535
Class Length	.0523	-.0327	.0931	-.0038	-.0188	-.1117	-.0846
Teacher Experience	.0263	.0437	**-.2399****	.0001	.1091	.0452	-.0264

All correlations are Spearman Rho

*** < .05, ** < .01**

Table 28

How Service Characteristics Relate to Each Other
Classroom Demographics with ECERS

	ECERS Subscale							
	Care	Furnish.	Lang.	Motor	Creative Activ	Social Devel	Adult Needs	Total
Number of Children	.0329	.0455	.0574	.0705	-.0329	.0528	.0302	.0489
Number of Children with Disabilities	**.3746****	**.2627***	.1974	**.2914***	.1881	.1665	**.2905***	**.3077***
Number of Staff	-.0605	-.1555	-.1294	-.1703	**-.2688***	.0086	-.1178	-.1534
Ratio of Staff: Children	-.0533	.0850	.2220	.1794	.0821	.0264	.0212	.0925
Ratio of Spec Instruct Staff: Children with Disabilities	**.3746****	**.2627***	.1974	**.2914***	.1881	.1665	**.2905***	**.3077***
Hours Per Week in Class	-.0180	-.0862	-.0236	-.0516	.0585	-.1472	-.0266	-.0595
Class Length	.0365	-.0753	-.0302	-.1055	.0410	-.1980	-.0674	-.0818
Teacher Experience	.0688	.0625	.0630	-.1653	-.1541	.0882	-.1049	.0038

All correlations are Spearman Rho

* < .05, ** < .01

Table 29

How Service Characteristics Relate to Each Other
Classroom Demographics with ITERS

	ITERS Subscale							
	Furnish.	Care	Listen & Talk	Learn	Interactv	Program Structure	Adult Needs	Total
Number of Children	.0584	.0337	-.1212	-.0062	-.0548	-.0139	**-.1983****	-.0477
Number of Children with Disabilities	**.1669***	**.1885****	**.2229****	**.2818****	.1125	.1061	.0495	**.1913****
Number of Staff	.0897	.0635	-.1373	.0464	-.1214	-.0626	**-.1652***	-.0194
Ratio of Staff: Children	.0056	-.0227	-.1314	-.1201	.0340	.0294	**-.1978****	-.0952
Ratio of Spec Instruct Staff: Children with Disabilities	.1395	**.1566***	**.1849***	**.2416****	.0585	.0531	.0170	**.1496***
Hours Per Week in Class	**-.1902****	-.0770	.0057	-.0104	**-.1956****	**-.2173****	.0807	-.1090
Class Length	**-.1596***	-.0398	-.0156	-.0173	**-.2467****	**-.2672****	.1063	-.1031
Teacher Experience	.0002	-.0400	-.0128	**-.1805***	.0411	-.1219	**-.2660****	-.0708

All correlations are Spearman Rho

*** < .05, ** < .01**

Table 30

How Service Characteristics Relate to Each Other
Classroom Quality ECERS with Activities

ECERS Subscale	Percent of Time In Each Activity or Role						
	Goal Directed	Freeplay	Circle	Eating	Adult Care	Transitn	Direct Intrvent
Care	-.0778	**-.2733***	.1498	.1528	.1227	.1804	**.3317***
Furnishing	-.0845	-.1586	**.2807***	.0429	-.0798	.1943	**.2716***
Language	.1083	**-.3402****	.2139	-.0037	-.0568	**.2896***	**.4988****
Motor	.0890	**-.3799****	.1591	.2052	.1799	.1851	**.5250****
Creative Activities	.0389	-.1613	-.0207	**.2637***	.1383	-.0845	.2297
Social Develop	.1536	**-.2692***	.0084	.0438	.0265	.2290	**.3189***
Adult Needs	.0440	-.2303	.2521	-.1666	-.0306	**.3186***	**.3489****
Total	.0318	**-.2948***	.1651	.0809	.0543	.2139	**.4348****

All correlations are Spearman Rho

* < .05, ** < .01

Table 31

How Service Characteristics Relate to Each Other
Classroom Quality ITERS with Activities

	Percent of Time In Each Activity or Role						
	Goal Directed	Freeplay	Circle	Eating	Adult Care	Transitn	Direct Intrvent
Furnishings	-.0459	-.1196	**.1978****	.0852	.0572	-.0552	**.1873****
Care	-.0284	-.0928	**.1915****	.0566	.0665	-.0537	**.1611***
Listen & Talk	.0572	**-.1586***	**.2682****	-.1173	-.0092	.0744	**.2612****
Learn	-.0292	-.1182	**.3154****	-.0918	-.0014	.0617	**.2393****
Interactive.	-.0761	.0771	**.2578****	-.0542	-.1158	**.1683***	**.2450****
Program Structure	-.0108	-.0856	**.2044****	.0086	**-.1648***	.1170	**.2348****
Adult Needs	.1068	**-.1608***	**.2298****	-.0317	-.0102	-.0388	**.2223****
Total	-.0071	-.1261	**.2608****	.0015	-.0138	.0224	**.2214****

All correlations are Spearman Rho

*** < .05, ** < .01**

Table 32

How Service Characteristics Relate to Each Other
Classroom Demographics with Location and Modality of Service Provision

	% of Service Provided: Each Location or Modality						
	Specialized instruction		All Other Services				
	Center	Home	Center	Home	Office	In Group	Through Consult
Number of Children	**-.1521***	**.1521***	-.0402	.0145	.0860	-.0283	.0114
Number of Children with Disabilities	.0307	-.0307	**.3242****	**-.2315****	**-.1346***	**.2992****	.0422
Number of Staff	**-.2599****	**.2599****	.0491	-.0182	-.0244	.0255	-.0171
Ratio of Staff: Children	-.0523	.0523	**-.1680****	.1038	**.1824****	**-.1461***	-.0037
Ratio of Spec Instruct Staff: Children with Disabilities	.0484	-.0484	**.3588****	**-.2715****	-.1188	**.3338****	.0277
Hours Per Week in Class	.0867	-.0867	.1058	**-.1295***	**.1296***	**.1556****	-.1026
Class Length	.0629	-.0629	.0770	-.1029	**.1251***	.1144	-.0883
Teacher Experience	**.2662****	**-.2662****	.0667	-.0467	-.0402	.0222	.0256

All correlations are Spearman Rho

*** < .05, ** < .01**

Table 33

How Service Characteristics Relate to Each Other
Classroom Activities with Location and Modality of Service Provision

	% of Service Provided: Each Location or Modality						
	Specialized Instruction		All Other Services				
	Center	Home	Center	Home	Office	In Group	Through Consult
Goal Directed	-.1156	.1156	-.0034	.0636	.0508	-.0010	-.0203
Freeplay	.0527	-.0527	-.0780	-.0062	.0353	-.0491	.0096
Circle	**-.1534***	**.1534***	**-.1815****	**.2050****	-.0423	**-.1687****	-.0505
Eating	.0590	-.0590	**.2440****	**-.1997****	-.0905	**.2196****	-.0656
Adult Care	.0246	-.0246	-.0389	.0736	-.0105	-.0580	**.1231****
Transition	**.1384***	**-.1384***	**.1477***	**-.1582***	-.0043	**.1429***	.0283
Direct Intervention	-.0697	.0697	-.0780	**.1724****	-.1108	-.1189	-0226

All correlations are Spearman Rho

*** < .05, ** < .01**

Table 34

How Service Characteristics Relate to Each Other
Defined IFSP Outcomes and Actual Service Prevalence

Domain/Service	Correlation Between Whether Outcome Defined and Whether Service Received
Language / Speech Therapy	.2749**
Motor / Physical Therapy	.6003**
Motor / Occupational Therapy	.3550**
Vision	.2287**

All correlations are Spearman Rho; correlation unavailable (-) for those services without any variation on location or modality variables.

* < .05, ** < .01

Table 35

How Service Characteristics Relate to Each Other
Prevalence of Different Services

	Special Instruct	Speech	Physical Therapy	Occupat. Therapy	Nursing	Audiol.	Family Counsel	Health
Special Instruction		-.0259	-.0535	-.0556	**-.1551***	.0110	.0187	.0235
Speech and Language	-.0259	-	.0362	**.1852****	**.1358***	.0742	.0880	**-.1967****
Physical Therapy	-.0535	-.0362	-	**.3257****	**.1656****	.0637	**-.1557***	.0257
Occupational Therapy	-.0556	**.1852****	**.3257****	-	**.2916****	.0702	-.0602	-.0524
Nursing	**-.1551***	**.1358***	**.1656****	**.2916****	-	**.2514****	**.1990****	**-.1515***
Audiology	.0110	.0742	.0637	.0702	**.2514****	-	**.4262****	-.0674
Family Counseling	.0187	.0880	**-.1557***	-.0602	**.1990****	**.4262****	-	.0095
Health	.0235	**-.1967****	.0257	-.0524	**-.1515***	-.0674	.0095	-
Medical	.0255	-.0409	.0711	**.1520***	.0245	-.0731	-.0075	**.1377***
Nutrition	.0173	-.0898	.0334	.0736	.0594	-.0496	-.0316	**.3818****
Service Coordination	-.0103	**.1302***	**-.1432***	.0416	-.0026	.0294	-.0352	.0629
Social Work	.0205	**-.1840****	.0030	-.0357	**.1271***	-.0589	.0376	.0664
Vision	.0278	-.0129	**.2231****	**.3214****	.0876	**.1576***	-.0256	**.1987****
Assistive Technology	.0192	**.1297***	**.2681****	**.2787****	**.1896****	**.3369****	**.1492***	.0448
Transportation	.0645	**-.1968****	**-.2590****	**-.4932****	-.0862	.0893	**.2521****	**.1261***

All correlations are Spearman Rho
*** < .05, ** < .01**

Table 35 (continued)

How Service Characteristics Relate to Each Other
Prevalence of Different Services

	Medical	Nutrition	Service Coordin.	Social Work	Vision	Assistive Technol.	Transprt.
Special Instruction	.0255	.0173	-.0103	.0205	.0278	.0192	.0645
Speech and Language	-.0409	-.0898	**.1302***	**-.1840****	-.0129	**.1297***	**-.1968****
Physical Therapy	.0711	.0334	**-.1432***	.0030	**.2231****	**.2681****	**-.2590****
Occupational Therapy	**.1520***	.0736	.0416	-.0357	**.3214****	**.2787****	**-.4932****
Nursing	.0245	.0594	-.0026	**.1271***	.0876	**.1896****	-.0862
Audiology	-.0731	-.0496	.0294	-.0589	**.1576***	**.3369****	.0893
Family Counseling	-.0075	-.0316	-.0352	.0376	-.0256	**.1492***	**.2521****
Health	**.1377***	**.3818****	.0629	.0664	**.1987****	.0448	**.1261***
Medical	-	.0520	**-.1334***	**.1533***	**.2209****	**.2552****	-.0618
Nutrition	.0520	-	.0463	**.1533***	**.3468****	**.2773****	.0421
Service Coordination	**-.1334***	.0463	-	.0550	.0744	.0514	.1241
Social Work	**.1533***	**.1533***	.0550	-	.0216	.0324	.0780
Vision	**.2209****	**.3468****	.0744	.0216	-	**.3658****	-.0845
Assistive Technology	**.2552****	**.2773****	.0514	.0324	**.3658****	-	-.0607
Transportation	-.0618	.0421	.1241	.0780	-.0845	-.0607	-

All correlations are Spearman Rho

*** < .05, ** < .01**

Table 36

How Service Characteristics Relate to Each Other
Relationship Within Service Areas: Intensity with Location and Modality

	Intensity and Percent Of Service Provided in Center	Intensity and Percent of Service Provided In Group	Intensity and Percent of Service Provided Through Consulation
Specialized Instruction	-.0925	-.0925	-.0116
Speech	**-.2538****	**-.2646****	**-.3203****
Physical Therapy	**-.4727****	**-.4590****	**-.3530****
Occupational Therapy	**-.5571****	**-.6105****	-.1372
Nursing	.2141	.3180	-.0621
Audiology	**.7845***	**.7845***	-
Family Counseling	.4448	**.8294****	-
Nutrition	-	-	**.5378***
Social Work	-	.4261	-
Vision	**.6481****	**.6037****	**.3262***
Assistive Technology	**.4409***	**.4409***	-
All Services Other Than Specialized Instruction	**-.4869****	**-.4491****	**-.1282***

All correlations are Spearman Rho; correlation unavailable (-) for those services without any variation on location or modality variables.

*** < .05, ** < .01**

Table 37

How Service Characteristics Relate to Each Other
Relationship Within Service Areas: Location and Modality

	Percent of Services Received at Center and Percent In group	Percent of Services Received at Center and Percent Through Consulation	Percent of Services Received In Group and Through Consultation
Specialized Instruction	**1.0000****	-.0989	-.0989
Speech	**.8865****	.0301	.0492
Physical Therapy	**.9848****	**.2159****	**.1874***
Occupational Therapy	**.9367****	**.1790***	.1404
Nursing	**.9127****	-.3042	-.2875
Audiology	**1.0000****	-	-
Family Counseling	**.6980****	-	-
Nutrition	-	-	-
Social Work	-	-	-
Vision	**.8895****	.2143	.1265
Assistive Technology	**1.0000****	-	-
All Services Other Than Specialized Instruction	**.9438****	.0865	.0464

All correlations are Spearman Rho; correlation unavailable (-) for those services without any variation on location or modality variables.

* < .05, ** < .01

Table 38

How Service Characteristics Relate to Each Other
Team Characteristics With Other Service Characteristics

Team	Characteristic of Planned or Received Service							
	# of IFSP Outcomes	# Different Services Received	Total Hours Received Per Week	Percent of Service Received at Center	Percent of Service Received at Home	Percent of Service Received Provider Office	Percent of Service Received In Group	Percent of Service Received Through Consult
Meeting Frequency	.0291	.0811	-.0477	-.1012	.0873	-.0815	.1211	**.2016****
Do All Attend Meeting?	-.0303	**-.1798****	-.0918	**.3206****	**-.3613****	.0688	**-2939****	-.0225
Team Size	-.0584	**.1821****	.0893	-.0078	.0654	.0064	-.0154	.0733
% of Team Members Who Are Providers	**.4223****	**.3585****	.1227	-.1078	**.1818****	**-.1278***	.1124	**.1311***
% of Providers On Team	.0851	**-.1538***	**-.1281***	-.0168	.1116	**-.2613****	.0115	**.1283***
Specialized Instructor on Team	.0509	.0157	**.2150***	.0757	-.0176	.0150	-.0712	-.0205
Parent on Team	.0184	-.0281	.0023	-.0180	.0977	**.2526****	.-1219	-.0809
Service Coordinator. On Team	**-.2566****	-.0197	.0860	-.0136	-.0622	**.1987****	.-0186	**-.2134****
Team Had Leader	.0299	.0416	**-.1424***	-.0457	.0086	-.0022	.0497	**.1283***

All Correlations are Spearman Rho

*** < .05, ** < .01**

Table 39

How Service Characteristics Relate to Demographics
Interrelationships Among Demographic Variables

	Sex of Child	One or Two Parent Household	Education of Primary Care Giver	Family Income	SES (Hollingshead Score)
Sex of Child	-	.0432	-.1489	-.0369	.0284
One or Two Parent Household	.0432	-	**.5253****	**.7349****	**.7232****
Education of Primary Care Giver	.1489	**.5253****	-	**.6002****	**.7837****
Family Income	-.0369	**.7349****	**.6002****	-	**.7966****
SES (Hollingshead Score)	-.0284	**.7323****	**.7837****	**.7966****	-

All correlations are Spearman Rho

** < .01

Table 40

How Service Characteristics Relate to Demographics
Classroom Characteristics and Age of Entry Into Early Intervention

	Sex of Child	One or Two Parent Household	Education of Primary Caregiver	Family Income	SES (Hollingshead Score)
Number of Children					
# of Children with Disability		-.159			
Number of Staff	-.175				
Staff to Children Ratio					
Specialized. Instruction. Staff to Children with Disabilities Ratio		-.154			
Time in Class			.151		
Length of Day					
Teacher Experience		-.196			
ITERS Total Score			.353	-.178	
Age EI Started (months)				-.445	

All listed values are significant ($p.< .05$) beta coefficients for the particular demographic variable when all five demographic variables are entered into a multiple regression predicting the service characteristic.

Table 41

How Service Characteristics Relate to Demographics
Classroom Activities

Percent of Time In Each Activity or Role	Sex of Child	One or Two Parent Household	Education of Primary Caregiver	Family Income	SES (Hollingshead Score)
Goal Directed			.124		
Freeplay	.122		-.178		
Circle			.328	.335	-.312
Eating		-.150			
Adult Care			-.153		
Transition					
Direct Intervention			.225		

All listed values are significant ($p.< .05$) beta coefficients for the particular demographic variable when all five demographic variables are entered into a multiple regression predicting the service characteristic.

Table 42

How Service Characteristics Relate to Demographics
IFSP Outcomes

IFSP Defined Outcomes Related To:	Sex of Child	One or Two Parent Household	Education of Primary Caregiver	Family Income	SES (Hollingshead Score)
Child					
Family					
Both Child and Family					
Neither Child nor Family	.129				.177
Motor				.243	
Speech					
Play		-.146			
Self Help	.207				
Behavior				-.128	
Assessment					
Cognitive		-.198			.295
Vision					.210
Health					
All Outcomes			-.221		
Total Number of Outcomes Defined				.269	

All listed values are significant ($p < .05$) beta coefficients for the particular demographic variable when all five demographic variables are entered into a multiple regression predicting the service characteristic.

Table 43

How Service Characteristics Relate to Demographics
Service Prevalence

Did the Child Receive?	Sex of Child	One or Two Parent Household	Education of Primary Caregiver	Family Income	SES (Hollingshead Score)
Specialized Instruction					
Speech and Language			.279	-.167	
Physical Therapy				.245	
Occupational Therapy				.385	
Nursing					
Audiology	-.160			-.153	
Family Counseling				-.147	
Health			.389		-.523
Medical		.275			
Nutrition	-.225				
Service Coordination			-.226		-.313
Social Work	.162				
Vision				.402	-.270
Assistive Technology		.217	.378		-.401
Transportation		-.189		-.395	

All listed values are significant ($p.< .05$) beta coefficients for the particular demographic variable when all five demographic variables are entered into a multiple regression predicting the service characteristic.

Table 44

How Service Characteristics Relate to Demographics
Service Intensity, Location, and Modality

Service Characteristic	Sex of Child	One or Two Parent Household	Education of Primary Caregiver	Family Income	SES (Hollingshead Score)
Intensity of All Services					
Intensity of All Other Hourly Services (not specialized instruction)					
Intensity of Specialized Instruction					
Percent of All Other Services Provided in Center				-.263	
Percent of All Other Services Provided at Home				.303	
Percent of All Other Services Provided in Office					
Percent of All Other Services Provided In Group		-.279			
Percent of All Other Services Provided as Direct Services	.154				.218

All listed values are significant ($p < .05$) beta coefficients for the particular demographic variable when all five demographic variables are entered into a multiple regression predicting the service characteristic.

Table 45

How Service Characteristics Relate to Demographics
Team Characteristics

	Sex of Child	One or Two Parent Household	Education of Primary Caregiver	Family Income	SES (Hollingshead Score)
Frequency of Meetings			.182		
Team Attendance		-.130			
Team Size				.220	
Percent of Team Members Who Are Providers					.129
Percent of Child's Providers on Team					
Specialized. Instructor On Team			.317		-.382
Service Coordinator. On Team					
Parent on Team			.303		
Team has a Leader					

All listed values are significant ($p < .05$) beta coefficients for the particular demographic variable when all five demographic variables are entered into a multiple regression predicting the service characteristic.

Table 46

Relationships Between Service Characteristics and Family Status and Change
Perceived Family Support

Service Characteristic Variable	Time of Report	Partial Correlation	Covariates in Addition to Demographics	Sample
Age when Early Intervention Service Began	36 months	-.3099		Full Sample 30 thru 36 months
Number of Children with Disabilities	36 months	.5495		Sub Sample 24 thru 36 months
Quality of Environment	30 months	.5193		Sub Sample 24 thru 30 months
	30 months	.4961	Battelle Total Score at 24 months	Sub Sample 24 thru 30 months
Level of Adult Intervention	30 months	.5716		Sub Sample 24 thru 30 months
	30 months	.6140	Battelle Total Score at 24 months	Sub Sample 24 thru 30 months
Intensity of Specialized Instruction	36 months	-.5970		Sub Sample 24 thru 36 months
	36 months	-.6007	Battelle Total Score at 24 months	Sub Sample 24 thru 36 months
Percent of Services Through Consultation	30 months	.5166	Battelle Total Score at 24 months	Sub Sample 24 thru 30 months
	36 months	.3338	Battelle Total Score at 30 months	Full Sample 30 thru 36 months

Table 47

Relationships Between Service Characteristics and Child Status and Change
Age When Early Intervention Service Began

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Age when Early Intervention Service Began	Language	Expressive Language Total at 36 months	.3399	Preschool Language Scale Total at 30 months	Full Sample 30 thru 36 months
	Language	Expressive Language Total at 36 months	.3399	Preschool Language Scale Total at 30 months	Full Sample 30 thru 36 months
	Language	Preschool Language Scale Total at 36 months	.3620	Preschool Language Scale Total at 30 months	Full Sample 30 thru 36 months
	Language	Preschool Language Scale Total Standardized Residuals 30 - 36 months	.2844		Full Sample 30 thru 36 months
	Motor	Battelle Motor Score at 30 months	.4951	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Motor	Peabody Gross Motor Score at 30 months	.6020	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Motor	Peabody Motor Scale Total at 30 months	.5294	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Motor	Peabody Motor Scale Total at 36 months	.2872	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	-.5005	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor PCI between 24 and 30 months	.5208		Sub Sample 24 thru 30 months
	Social Development	Battelle Personal-Social Score at 36 months	-.3250	Battelle Total Score at 30 months	Full Sample 30 thru 36 months

Table 48

Relationships Between Service Characteristics and Child Status and Change
Classroom Characteristics

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Number of Children with Disabilities	Language	Battelle Language Score at 30 months	-.4559	Preschool Language Scale Total Score at 24 months	Sub Sample 24 thru 30 months
	Language	Battelle Language PCI between 30 and 36 months	.3328		Full Sample 30 thru 36 months
	Language	Auditory Language PCI between 24 and 30 months	-.5623		Sub Sample 24 thru 30 months
	Language	Auditory Language PCI between 24 and 36 months	-.6242		Sub Sample 24 thru 36 months
	Language	Expressive Language PCI between 24 and 36 months	.5334		Sub Sample 24 thru 36 months
	Language	Auditory Language Standardized Residual at 24 - 36 months	-.5906		Sub Sample 24 thru 36 months
Quality of Environment	Language	Auditory Language PCI between 24 and 36 months	-.4328		Sub Sample 24 thru 36 months
	Language	Auditory Language Standardized Residual at 24 - 36 months	-.4214		Sub Sample 24 thru 36 months
	Motor	Battelle Motor Score at 36 months	-.2923	Peabody Motor Scale Total at 30 months	Full Sample 30 thru 36 months
	Motor	Fine Motor Score at 30 months	-.4114	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Motor	Fine Motor Score at 30 months	-.4639	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 30 months

Table 48(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Teacher Experience	Language	Battelle Language Score at 36 months	-.3083	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Language	Expressive Language Total at 36 months	-.3078	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Language	Battelle Language PCI between 24 and 30 months	.4512		Sub Sample 24 thru 30 months
	Language	Expressive Language PCI between 24 and 30 months	.5084		Sub Sample 24 thru 30 months
	Motor	Peabody Fine Motor Score at 36 months	-.5229	Battelle Total at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Fine Motor Score at 36 months	-.5991	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor Score at 36 months	-.4437	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	-.2862	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	-.3458	Peabody Motor Scale Total at 30 months	Full Sample 30 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	-.6824	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Fine Motor Standardized Residuals for 24 - 36 months	-.4654		Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale Standardized Residuals for 24 - 36 months	-.4623		Sub Sample 24 thru 36 months
	Social Status	Watch out for at 36 months	.3275		Full Sample 30 thru 36 months
	Social Status	Watch out for at 36 months	.3269	Battelle Total Score at 30 months	Full Sample 30 thru 36 months

Table 48(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Level of Adult Intervention	Cognitive	Battelle Cognitive Total at 36 months	.2874	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Development	Battelle Adaptive PCI between 30 and 36	.2497		Full Sample 30 thru 36 months
	Development	Battelle Total PCI between 30 and 36	.2626		Full Sample 30 thru 36 months
	Motor	Peabody Gross Motor Score at 36 months	-.6233		Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	-.4886		Sub Sample 24 thru 36 months
	Motor pci	Peabody Motor Scale PCI between 30 and 36	.2810		Full Sample 30 thru 36 months
	Social Status	Sit Near During Circle at 36 months	.5825	Battelle Total at 24 months	Sub Sample 24 thru 36 months
Free Play	Development	Battelle Adaptive PCI between 24 and 36 months	-.4048		Sub Sample 24 thru 36 months
	Development	Battelle Adaptive PCI between 30 and 36	-.3146		Full Sample 30 thru 36 months
	Language	Battelle Language Score at 36 months	-.2560	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Motor	Peabody Motor Scale PCI between 30 and 36	-.2878		Full Sample 30 thru 36 months
	Social Status	Sit Near During Circle at 36 months	-.6073	Battelle Total at 24 months	Sub Sample 24 thru 36 months

Table 49

Relationships Between Service Characteristics and Child Status and Change
Intensity of Service

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Number of Services Other Than Specialized Instruction	Development	Battelle Total PCI between 30 and 36	.2602		Full Sample 30 thru 36 months
	Language	Battelle Language Score at 30 months	-.4147	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Language	Battelle Language Score at 36 months	-.3301	Preschool Language Scale Total at 30 months	Full Sample 30 thru 36 months
	Language	Expressive Language Total at 36 months	-.2652	Preschool Language Scale Total at 30 months	Full Sample 30 thru 36 months
	Language	Battelle Language PCI between 24 and 36 months	.5278		Sub Sample 24 thru 36 months
	Language	Battelle Language PCI between 30 and 36 months	.3737		Full Sample 30 thru 36 months
	Social Development	Battelle Personal-Social Score at 36 months	.3332	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Social Development	Battelle Personal-Social PCI between 30 and 36 months	.3093		Full Sample 30 thru 36 months
	Social Status	Sit Near During Circle at 36 months	.3125	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Social Status	Sit Near During Activity at 36 months	.2771	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Social Status	Sit Near During Snack at 36 months	.3020	Battelle Total Score at 30 months	Full Sample 30 thru 36 months

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Table 49(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Intensity of Specialized Instruction	Cognitive	Battelle Cognitive Score at 30 months	.4530	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Cognitive	Battelle Cognitive PCI between 24 and 30 months	.4991		Sub Sample 24 thru 30 months
	Cognitive	Battelle Cognitive Score Standardized Residual at 24 - 30 months	.4634		Sub Sample 24 thru 30 months
	Language	Auditory Language Score at 30 months	.4031	Preschool Language Scale Total Score at 24 months	Sub Sample 24 thru 30 months
	Language	Preschool Language Scale Total at 30 months	.4207	Preschool Language Scale Total Score at 24 months	Sub Sample 24 thru 30 months
	Language	Battelle Language PCI between 24 and 30 months	.3833		Sub Sample 24 thru 30 months
	Language	Expressive Language PCI between 24 and 36 months	.4964		Sub Sample 24 thru 36 months
	Language	Preschool Language Scale PCI between 24 and 30 months	.4104		Sub Sample 24 thru 30 months
	Language	Preschool Language Scale PCI between 24 and 36 months	.5317		Sub Sample 24 thru 36 months
	Language	Expressive Language Score Standardized Residual at 24 - 30 months	.5379		Sub Sample 24 thru 30 months
	Language	Expressive Language Score Standardized Residual at 24 - 36 months	.4740		Sub Sample 24 thru 36 months

Table 49(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Intensity of Specialized Instruction	Language	Preschool Language Scale Standardized Residual at 24 - 30 months	.4194		Sub Sample 24 thru 30 months
	Motor	Battelle Motor Score at 30 months	.3961	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 30 months
	Motor	Peabody Motor Scale Total at 30 months	.4237	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 30 months
	Motor	Peabody Motor Scale PCI between 24 and 30 months	.4625		Sub Sample 24 thru 30 months
	Social Status	Choose Child as Buddy at 36 months	-.3265	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
Intensity of Services Other than Specialized Instruction	Language	Battelle Language Score at 30 months	-.4301	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Language	Battelle Language Score at 30 months	-.4979	Preschool Language Scale Total Score at 24 months	Sub Sample 24 thru 30 months
	Language	Battelle Language Score at 36 months	-.2983	Preschool Language Scale Total at 30 months	Full Sample 30 thru 36 months
	Language	Battelle Language PCI between 24 and 36 months	.8151		Sub Sample 24 thru 36 months
	Language	Battelle Language PCI between 30 and 36 months	.5876		Full Sample 30 thru 36 months
	Language	Expressive Language PCI between 24 and 36 months	.7061		Sub Sample 24 thru 36 months

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Table 49(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Intensity of Occupational Therapy	Motor	Peabody Gross Motor PCI between 24 and 30 months	-.3821		Sub Sample 24 thru 30 months
Intensity of Physical Therapy	Motor	Battelle Motor Score at 36 months	-.2642		Full Sample 30 thru 36 months
	Motor	Peabody Fine Motor Score at 36 months	.2743		Full Sample 30 thru 36 months
Intensity of Speech Therapy	Social Development	Battelle Personal-Social PCI between 24 and 36 months	.5083		Sub Sample 24 thru 36 months

Table 50

Relationships Between Service Characteristics and Child Status and Change Location of Services

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Services Received in Center	Motor	Peabody Motor Scale Total at 30 months	.4899	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 30 months
	Motor	Peabody Gross Motor PCI between 24 and 30 months	.4692		Sub Sample 24 thru 30 months
	Motor	Peabody Gross Motor PCI between 24 and 30 months	.4704	Average Total Number of Service Hours	Sub Sample 24 thru 30 months
	Motor	Peabody Gross Motor PCI between 24 and 36 months	.4856		Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor PCI between 24 and 36 months	.4958	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale PCI between 24 and 36 months	.4459		Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale PCI between 24 and 36 months	.4614	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor Score Standardized Residual for 24 - 36 months	.5582	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor Score Standardized Residual for 24 - 36 months	.5468		Sub Sample 24 thru 36 months
	Social Status	Choose Child as Buddy at 36 months	.5702		Sub Sample 24 thru 36 months

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Table 50(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Services Received in Center	Social Status	Choose Child as Buddy at 36 months	.5542	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Social Status	Choose Child as Buddy at 36 months	.5763	Battelle Total at 24 months	Sub Sample 24 thru 36 months
	Social Status	Sit Near During Circle at 30 months	.5393	Average Total Number of Service Hours	Sub Sample 24 thru 30 months
	Social Status	Sit Near During Circle at 30 Months	.5321		Sub Sample 24 thru 30 months
	Social Status	Sit Near During Activity at 30 Months	.5074		Sub Sample 24 thru 30 months
	Social Status	Sit Near During Activity at 30 Months	.5103	Average Total Number of Service Hours	Sub Sample 24 thru 30 months
	Social Status	Sit Near During Snack at 36 months	.4868	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
Percent of Occupational Therapy Received in Center	Motor	Battelle Motor Score at 36 months	.3927		Full Sample 30 thru 36 months
	Motor	Battelle Motor Score at 36 months	.3598	Peabody Motor Scale Total at 30 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Full Sample 30 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.3616		Full Sample 30 thru 36 months
	Motor	Battelle Motor PCI between 30 and 36 months	.3825		Full Sample 30 thru 36 months
	Motor	Battelle Motor Score Standardized Residual for 30 - 36 months	.4726		Full Sample 30 thru 36 months

Table 50(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Physical Therapy Received in Center	Motor	Peabody Gross Motor PCI between 24 and 30 months	.5118		Sub Sample 24 thru 30 months
	Motor	Peabody Gross Motor PCI between 24 and 36 months	.6675		Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale PCI between 24 and 30 months	.5111		Sub Sample 24 thru 30 months
	Motor	Peabody Motor Scale PCI between 24 and 30 months	.5929	Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 30 months
	Motor	Peabody Gross Motor Score Standardized Residual for 24 - 36 months	.7083	Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor Score Standardized Residual for 24 - 36 months	.6430		Sub Sample 24 thru 36 months
Percent of Speech Therapy Received in Center	Social Development	Battelle Personal-Social Scale Standardized Residual for 24 - 36 months	.4200		Sub Sample 24 thru 36 months

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Table 51

Relationships Between Service Characteristics and Child Status and Change
Modality of Services - Provision In Group

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Services Received In Group	Motor	Peabody Gross Motor Score at 30 months	.4245	Peabody Motor Scale Total Score at 24 months	Sub Sample Age Points 24 thru 30 months
	Motor	Peabody Gross Motor Score at 36 months	.4403	Peabody Motor Scale Total Score at 24 months	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Motor Scale Total at 30 months	.4841	Peabody Motor Scale Total Score at 24 months	Sub Sample Age Points 24 thru 30 months
	Motor	Peabody Gross Motor PCI between 24 and 30 months	.4650		Sub Sample Age Points 24 thru 30 months
	Motor	Peabody Gross Motor PCI between 24 and 30 months	.4652	Average Total Number of Service Hours	Sub Sample Age Points 24 thru 30 months
	Motor	Peabody Gross Motor PCI between 24 and 36 months	.5045	Average Total Number of Service Hours	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Gross Motor PCI between 24 and 36 months	.4960		Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Gross Motor Score Standardized Residual for 24 - 36 months	.5795		Sub Sample Age Points 24 thru 36 months
	Social Status	Choose Child as Buddy at 36 months	.5808	Average Total Number of Service Hours	Sub Sample Age Points 24 thru 36 months
	Social Status	Choose Child as Buddy at 36 months	.5893		Sub Sample Age Points 24 thru 36 months
	Social Status	Choose Child as Buddy at 36 months	.3106		Full Sample Age Points 30 thru 36 months
	Social Status	Choose Child as Buddy at 36 months	.2760	Average Total Number of Service Hours	Full Sample Age Points 30 thru 36 months

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Table 51(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Services Received In Group	Social Status	Choose Child as Buddy at 36 months	.5842	Battelle Total at 24 months	Sub Sample Age Points 24 thru 36 months
	Social Status	Sit Near During Circle at 30 months	.4987	Average Total Number of Service Hours	Sub Sample Age Points 24 thru 30 months
	Social Status	Sit Near During Circle at 30 months	.4955	Battelle Total at 24 months	Sub Sample Age Points 24 thru 30 months
	Social Status	Sit Near During Circle at 30 Months	.4948		Sub Sample Age Points 24 thru 30 months
	Social Status	Social Status Total at 36 months	.4965	Average Total Number of Service Hours	Sub Sample Age Points 24 thru 36 months
	Social Status	Social Status Total at 36 months	.4909		Sub Sample Age Points 24 thru 36 months
	Social Status	Social Status Total at 36 months	.4904	Battelle Total at 24 months	Sub Sample Age Points 24 thru 36 months
	Social Status	Sit Near During Activity at 30 Months	.4803		Sub Sample Age Points 24 thru 30 months
	Social Status	Sit Near During Activity at 30 Months	.4814	Average Total Number of Service Hours	Sub Sample Age Points 24 thru 30 months
	Social Status	Sit Near During Activity at 30 Months	.4963	Battelle Total at 24 months	Sub Sample Age Points 24 thru 30 months
	Social Status	Sit Near During Snack at 36 months	.5323	Average Total Number of Service Hours	Sub Sample Age Points 24 thru 36 months
	Social Status	Sit Near During Snack at 36 months	.4583		Sub Sample Age Points 24 thru 36 months
	Social Status	Sit Near During Snack at 36 months	.4698	Battelle Total at 24 months	Sub Sample Age Points 24 thru 36 months

Table 51(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Occupational Therapy Received In Group	Motor	Battelle Motor Score at 36 months	.3724	Peabody Motor Scale Total at 30 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Full Sample Age Points 30 thru 36 months
	Motor	Battelle Motor Score at 36 months	.4129		Full Sample Age Points 30 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.5655	Peabody Motor Scale Total Score at 24 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.5457	Peabody Motor Scale Total Score at 24 months	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.4156		Full Sample Age Points 30 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.3631		Full Sample Age Points 30 thru 36 months
	Motor	Battelle Motor PCI between 30 and 36 months	.3700		Full Sample Age Points 30 thru 36 months
	Motor	Battelle Motor Score Standardized Residual for 30 - 36 months	.4165	Average Total Number of Physical Therapy Hours	Full Sample Age Points 30 thru 36 months
	Motor	Battelle Motor Score Standardized Residual for 30 - 36 months	.4448		Full Sample Age Points 30 thru 36 months
	Motor	Battelle Motor Score Standardized Residual for 24 - 36 months	.5118		Sub Sample Age Points 24 thru 36 months

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Table 51(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Physical Therapy Received In Group	Motor	Peabody Gross Motor Score at 36 months	.8661	Peabody Motor Scale Total Score at 24 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Gross Motor Score at 36 months	.7128	Peabody Motor Scale Total Score at 24 months	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Gross Motor PCI between 24 and 36 months	.7320	Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Gross Motor PCI between 24 and 36 months	.6814		Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Motor Scale PCI between 24 and 36 months	.6245	Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Gross Motor Score Standardized Residual for 24 - 36 months	.7209	Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample Age Points 24 thru 36 months
	Motor	Peabody Gross Motor Score Standardized Residual for 24 - 36 months	.6500		Sub Sample Age Points 24 thru 36 months

Table 52

Relationships Between Service Characteristics and Child Status and Change
Modality of Service - Services Received Through Consultation

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Services Through Consultation	Language	Battelle Language Score at 30 months	.3949	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Language	Battelle Language Score at 36 months	.4132	Battelle Total at 24 months	Sub Sample 24 thru 36 months
	Language	Expressive Language Total at 36 months	.5841	Battelle Total at 24 months	Sub Sample 24 thru 36 months
	Language	Expressive Language Total at 36 months	.5689	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Language	Expressive Language Total at 36 months	.5235	Preschool Language Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Language	Expressive Language Score Standardized Residual at 24 - 30 months	.4136	Average Total Number of Service Hours	Sub Sample 24 thru 30 months
	Language	Expressive Language Score Standardized Residual at 24 - 36 months	.4422	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Motor	Battelle Motor Score at 36 months	.4439	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Fine Motor Score at 36 months	.5907	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor Score at 36 months	.3160	Peabody Motor Scale Total at 30 months	Full Sample 30 thru 36 months
	Motor	Peabody Gross Motor Score at 36 months	.8032	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.3845	Peabody Motor Scale Total at 30 months	Full Sample 30 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.8635	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Battelle Motor Score PCI between 24 and 36 months	.5107		Sub Sample 24 thru 36 months

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Table 52(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Services Through Consultation	Motor	Battelle Motor Score Standardized Residuál for 24 - 36 months	.4182	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Fine Motor Score Standardized Residual for 30 - 36 months	.2746		Full Sample 30 thru 36 months
	Motor	Battelle Motor Score Standardized Residual for 24 - 36 months	.4706		Sub Sample 24 thru 36 months
	Social Development	Battelle Personal-Social Score at 36 months	.4376	Battelle Total at 24 months	Sub Sample 24 thru 36 months
	Social Development	Battelle Personal-Social Score at 36 months	.4560	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Social Status	Choose Child as Buddy at 36 months	.4845		Sub Sample 24 thru 36 months
	Social Status	Choose Child as Buddy at 36 months	.2695		Full Sample 30 thru 36 months
	Social Status	Sit Near During Circle at 30 months	.5305	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Social Status	Sit Near During Circle at 36 months	.5493		Sub Sample 24 thru 36 months
	Social Status	Sit Near During Circle at 36 months	.6285	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Social Status	Social Status Total at 36 months	.6714		Sub Sample 24 thru 36 months
	Social Status	Social Status Total at 36 months	.3292	Average Total Number of Service Hours	Full Sample 30 thru 36 months
	Social Status	Social Status Total at 36 months	.7216	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Social Status	Social Status Total at 36 months	.3086	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Social Status	Social Status Total at 36 months	.6197	Battelle Total at 24 months	Sub Sample 24 thru 36 months
	Social Status	Sit Near During Activity at 30 Months	.5173	Battelle Total at 24 months	Sub Sample 24 thru 30 months
	Social Status	Sit Near During Activity at 36 months	.5685	Average Total Number of Service Hours	Sub Sample 24 thru 36 months

Table 52(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Services Through Consultation	Social Status	Sit Near During Snack at 36 months	.6077		Sub Sample 24 thru 36 months
	Social Status	Sit Near During Snack at 36 months	.8057	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Social Status	Sit Near During Snack at 36 months	.5206	Battelle Total at 24 months	Sub Sample 24 thru 36 months
	Social Status	Watch out for at 36 months	.6286		Sub Sample 24 thru 36 months
	Social Status	Watch out for at 36 months	.4535		Full Sample 30 thru 36 months
	Social Status	Watch out for at 36 months	.4491	Average Total Number of Service Hours	Full Sample 30 thru 36 months
	Social Status	Watch out for at 36 months	.6109	Average Total Number of Service Hours	Sub Sample 24 thru 36 months
	Social Status	Watch out for at 36 months	.4794	Battelle Total Score at 30 months	Full Sample 30 thru 36 months
	Social Status	Watch out for at 36 months	.6417	Battelle Total at 24 months	Sub Sample 24 thru 36 months
Percent of Occupational Therapy Through Consultation	Motor	Peabody Fine Motor Score at 36 months	.6164	Peabody Motor Scale Total Score at 24 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Fine Motor Score at 36 months	.6606	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor Score at 36 months	.6905	Peabody Motor Scale Total Score at 24 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Gross Motor Score at 36 months	.6643	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.8456	Peabody Motor Scale Total Score at 24 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.8590	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Battelle Motor Score PCI between 24 and 30 months	-.6145	Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 30 months

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Table 52(continued)

Service Characteristic Variable	Domain	Specific Area	Partial Correlation	Covariates in Addition to Demographics	Sample
Percent of Physical Therapy Through Consultation	Motor	Battelle Motor Score at 36 months	.5397	Peabody Motor Scale Total Score at 24 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 36 months
	Motor	Battelle Motor Score at 36 months	.5477	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Fine Motor Score at 36 months	.3805	Peabody Motor Scale Total at 30 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Full Sample 30 thru 36 months
	Motor	Peabody Fine Motor Score at 36 months	.8388	Peabody Motor Scale Total Score at 24 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Fine Motor Score at 36 months	.8549	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.7773	Peabody Motor Scale Total Score at 24 months, Average Total Number of Physical Therapy Hours, Average Total Number of Occupational Therapy Hours	Sub Sample 24 thru 36 months
	Motor	Peabody Motor Scale Total at 36 months	.7987	Peabody Motor Scale Total Score at 24 months	Sub Sample 24 thru 36 months
Percent of Speech Therapy Through Consultation	Language	Expressive Language Total at 36 months	.5362	Preschool Language Scale Total Score at 24 months	Sub Sample 24 thru 36 months
	Language	Expressive Language Total at 36 months	.5467	Preschool Language Scale Total Score at 24 months, Average Total Number of Speech Therapy Hours	Sub Sample 24 thru 36 months
	Language	Expressive Language Score Standardized Residual at 24 - 36 months	.4686		Sub Sample 24 thru 36 months
	Language	Expressive Language Score Standardized Residual at 24 - 36 months	.4684	Average Total Number of Speech Therapy Hours	Sub Sample 24 thru 36 months

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Figure 4	Mean Percent Of Time Spent in Each Classroom Activity
Figure 5	Percent of Services Provided at Each Location
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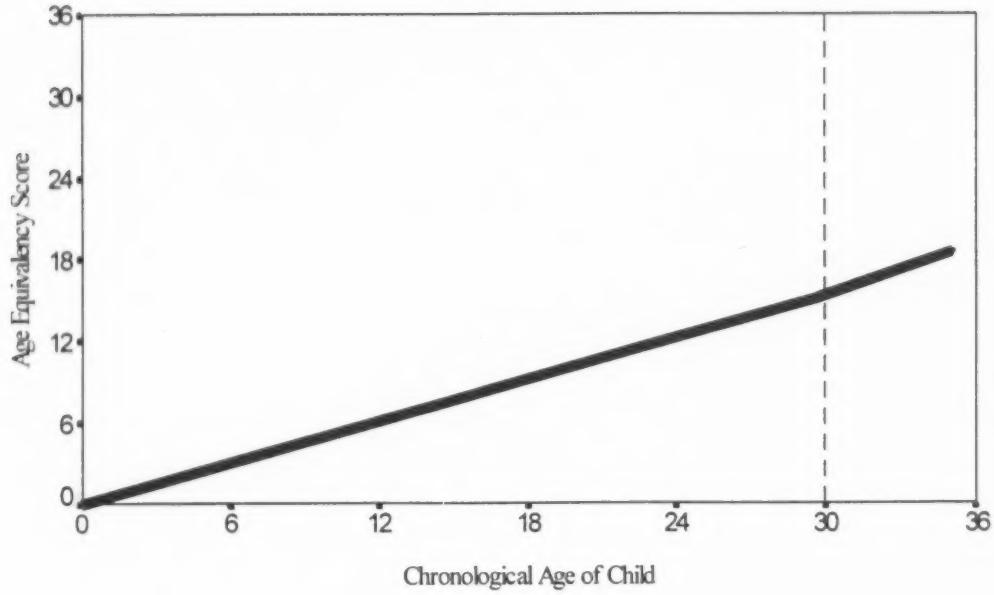

Figure 1. Comparing Children's Rate of Development on Batelle Personal Social Subscale for Ages 30-36 to Prior Developmental Rates

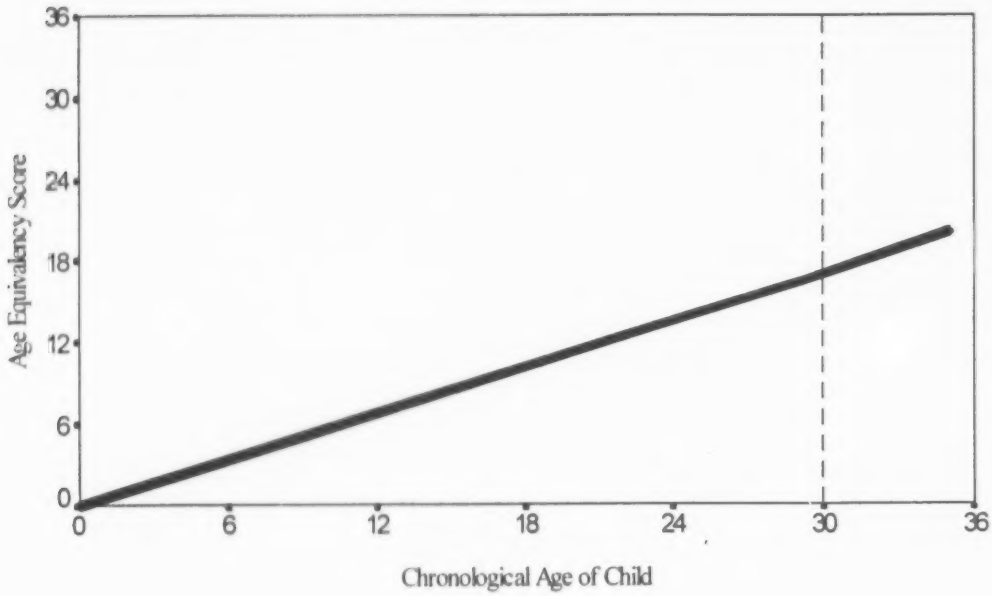

Figure 2. Comparing Children's Rate of Development on Peabody Fine Motor Subscale for Ages 30-36 to Prior Developmental Rates

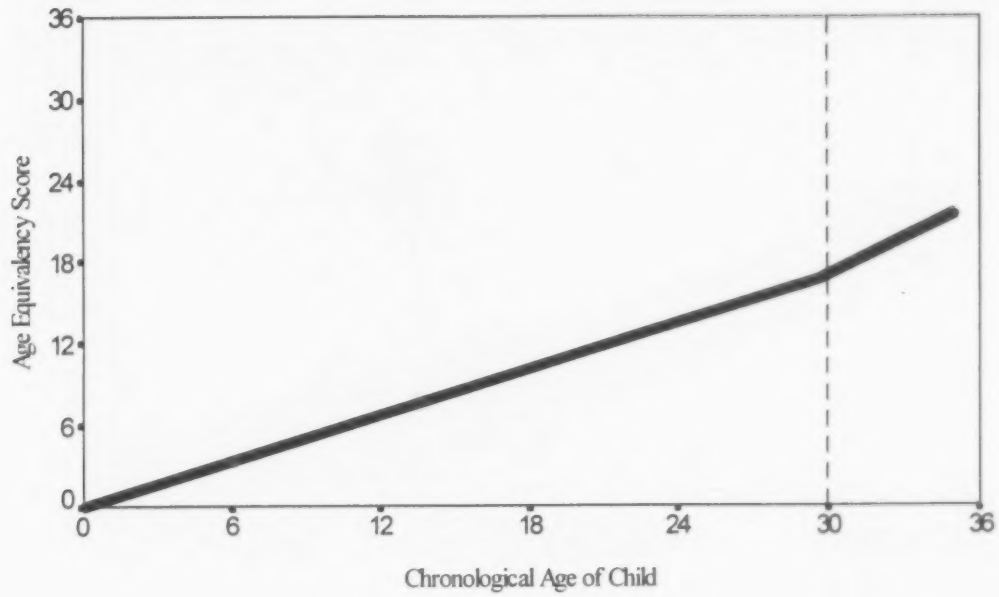

Figure 3. Comparing Children's Rate of Development on Pre-School Language Scale Auditory Subscale for Ages 30-36 to Prior Developmental Rates

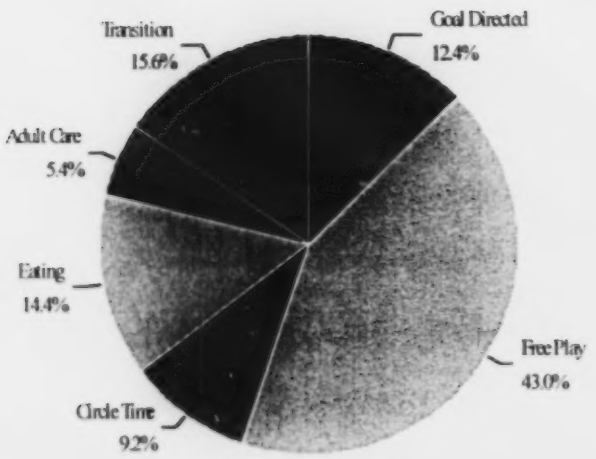

Figure 4. Mean Percent of Time Spent in Each Classroom Activity

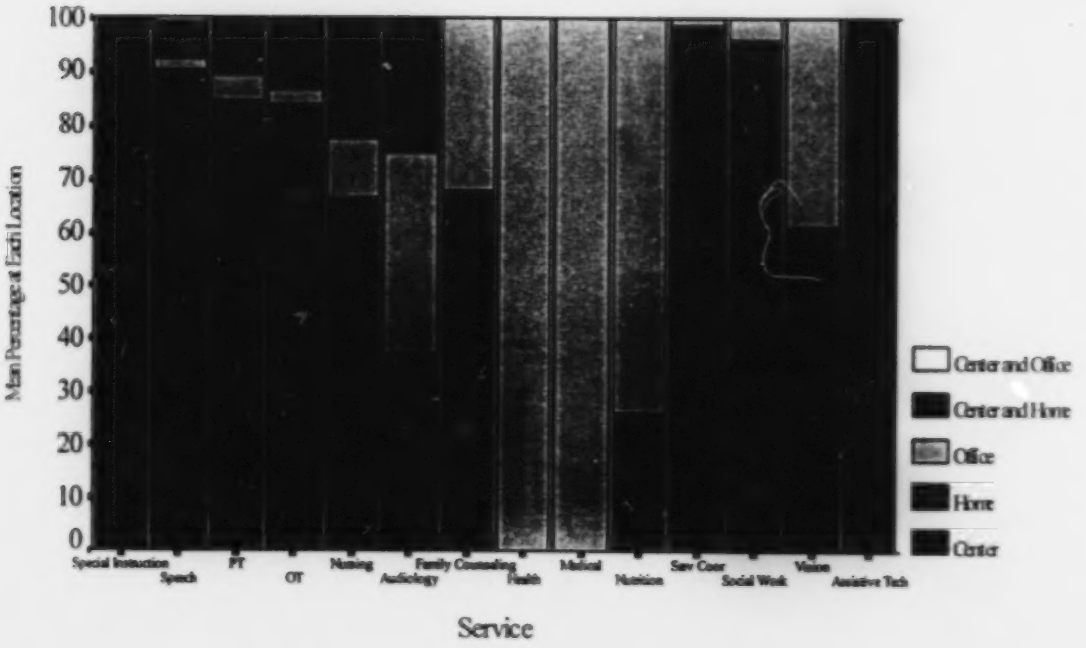

Figure 5. Percent of Services Provided at Each Location

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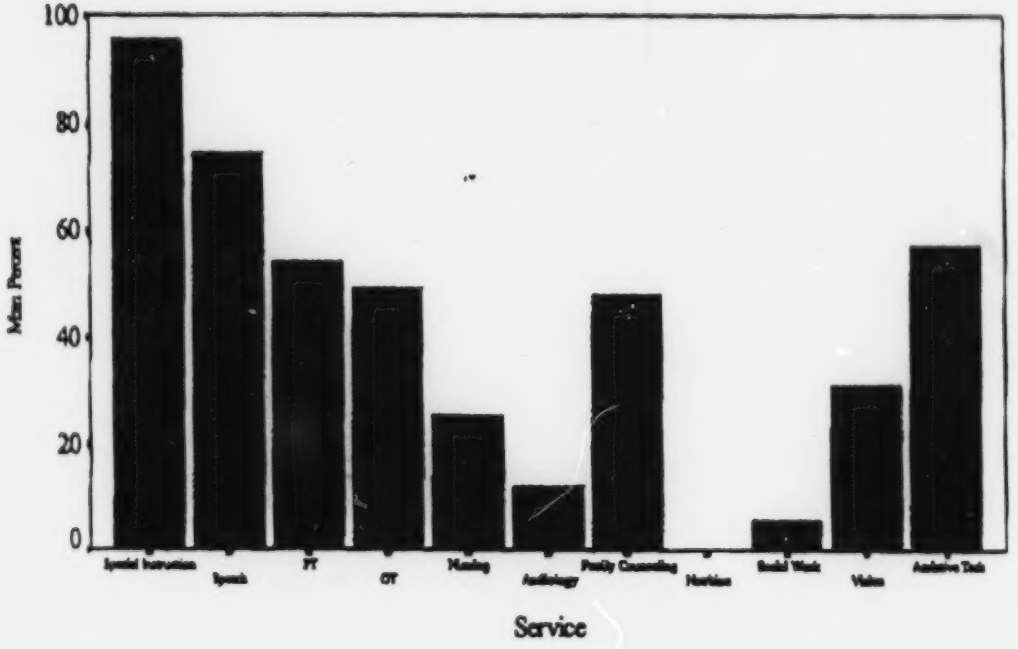

Figure 6. Percent of Services Provided In Group

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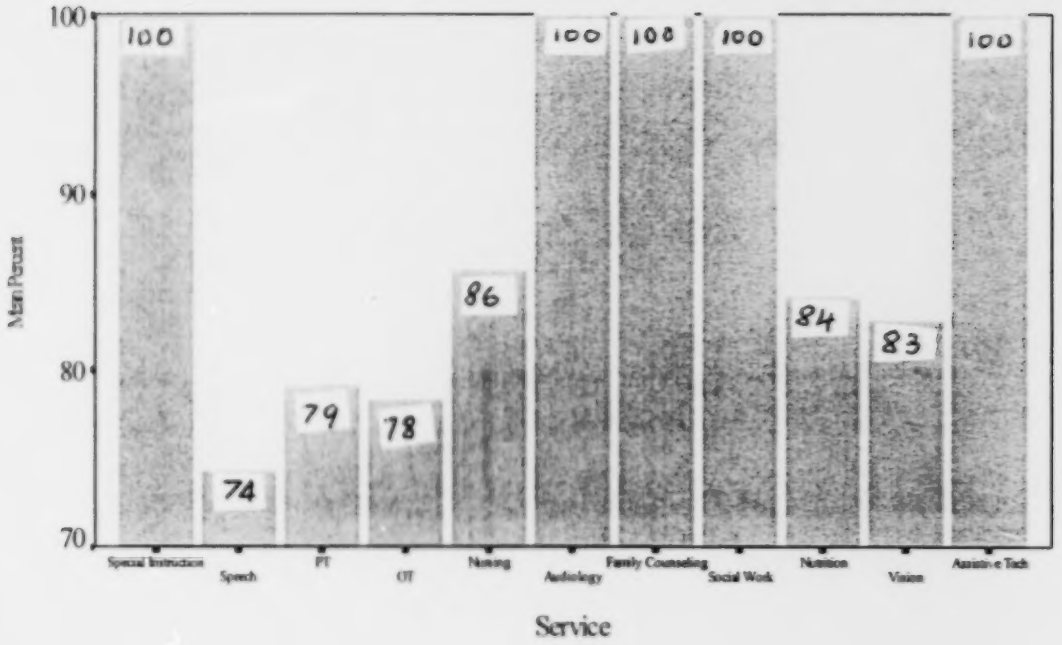

Figure 7. Percent of Services Provided Directly by Service Provider

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